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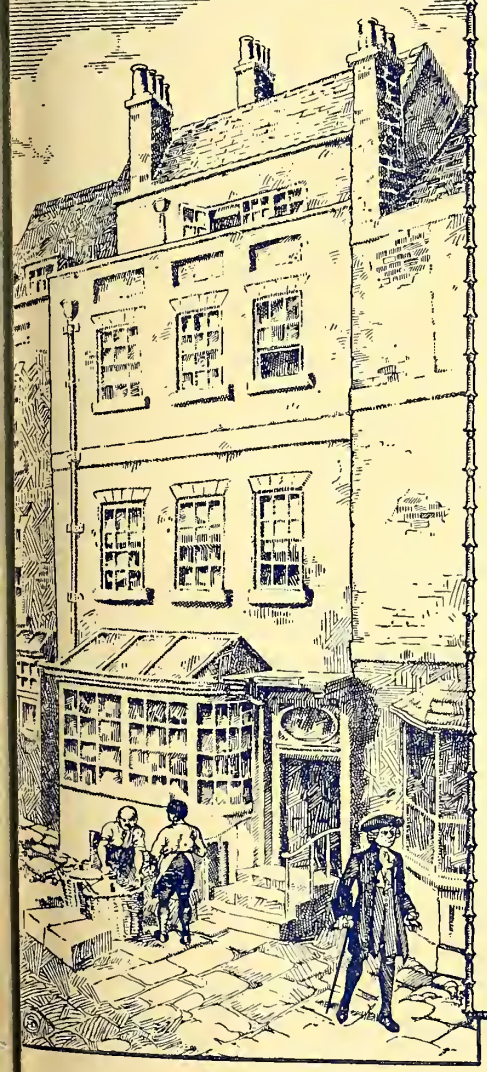
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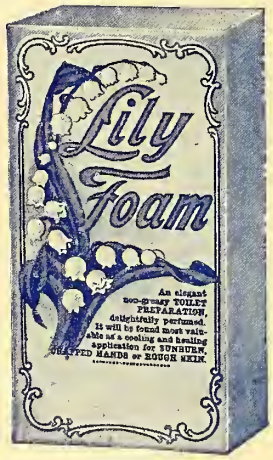
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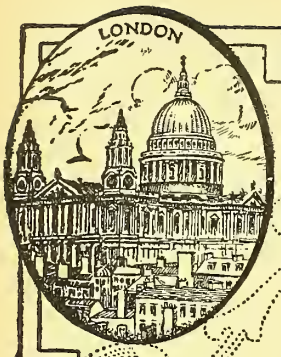
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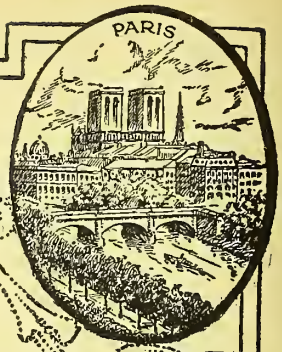
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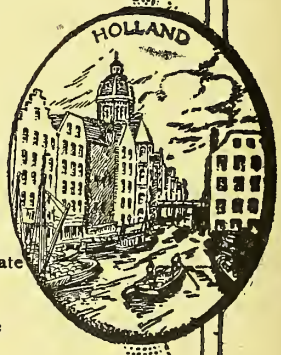






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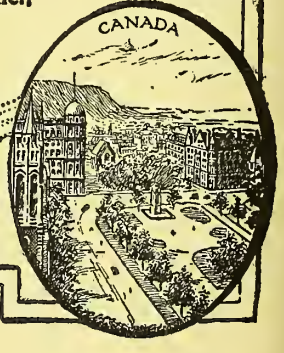
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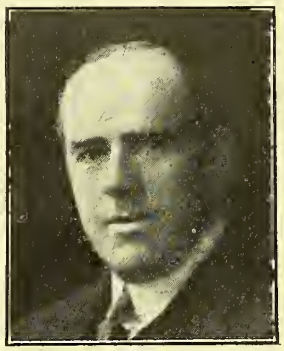
Thompson & Capper, Ltd.

A Century of Progress

IT must be a great asset to a firm to be able to date back its existence one hundred and twenty years, provided, of course, that the firm has moved with the times.

Judging by a recent visit to the various establishments of Messrs. Thompson & Capper, Ltd., this old-established firm has certainly kept very up-to-date.

Established in 1798 as Homœopathic Chemists, by Mr. Thomas Thompson, the business was apparently quite successful, and was later carried on by Mr. George Thompson under the style of Thomas Thompson & Son. It was in 1843 that Mr. Samuel James Capper joined the firm which then became known as Thompson & Capper.



Mr. EDWIN THOMPSON,
Governing Director,
Thompson & Capper, Ltd., and Director,
Holt, Thompson & Co., Ltd.

As time went on, branches were opened in some of the chief cities of Lancashire and Yorkshire, and for a time it was the retail side only of the business that claimed attention. Gradually, however, the wholesale side was developed and a very large demand sprang up for Homœopathic medicines, and these were ordered in considerable quantities by chemists in all parts of the country. Thompson & Capper were also appointed sole agents for Neave's Food in their district, and the handling of this commodity became a considerable item. In 1890 "Quinphos" was put on the market, and coming just at the time of the first serious scare of Russian Influenza there was a tremendous demand.



Mr. ARNOLD COLLINSON,
Director,
Thompson & Capper, Ltd.



Mr. ROBERT GARNER,
General Manager,
Thompson & Capper, Ltd.

As years progressed, changes in the firm came about, and after the death of Mr. Isaac Thompson, and later of Mr. S. J. Capper, Mr. Edwin Thompson, son of the former, became in 1911 the sole proprietor, and in 1912 converted the business into a private company and became Governing Director.

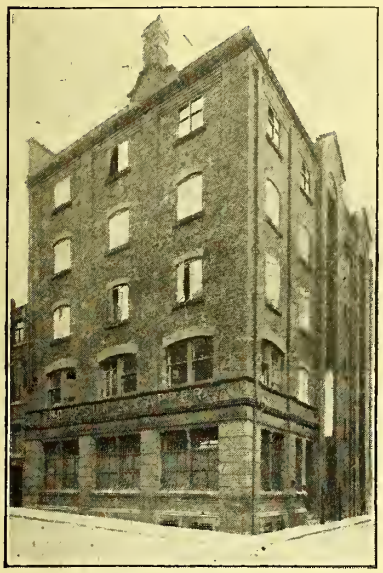
Progress under the direction of Mr. Edwin Thompson has been very great. To take the retail branches first, these have in almost every case been brought up to the very latest modern standards. New windows were put in and the interiors entirely revolutionised, being made roomy and bright, with the old-fashioned counters thrown on the scrap heap and beautiful glass cases put in their place. Customers now coming in can see rather more than head and shoulders of the individual behind the counter; thus customer and assistant can talk freely together. This alone has had the very best results in that a sort of friendship has sprung up between the staff and their numerous customers. It might be mentioned here that Thompson & Capper, Ltd., are very particular in their choice of staff, as they consider it is of vital importance that every customer, whether they come in to spend a penny or a pound, should be welcomed and treated with every courtesy.

The windows in the retail establishments are always dressed with the greatest care; in fact, before each new window is put in a rough design is drawn showing the general idea and the places where the chief lines are to go. These are sold by means of talking cards, a scheme of advertising for which Thompson & Capper, Ltd., are renowned.

Our photographs show Manesty Buildings, the premises that Thompson & Capper, Ltd., moved into some eight years ago, also the building opposite in Manesty's Lane into which they extended owing to the growth of the business.

This second factory is entirely devoted to Tablet making, and is rather conveniently arranged in that it is divided up into different rooms so that different contracts can be carried out simultaneously. During our visit we were

Thompson & Capper, Ltd.



Manesty Buildings,
Thompson & Capper, Ltd.

shown a room where a very large contract for South America was being executed, whilst in another a number of machines were very busy making Saccharine tablets.

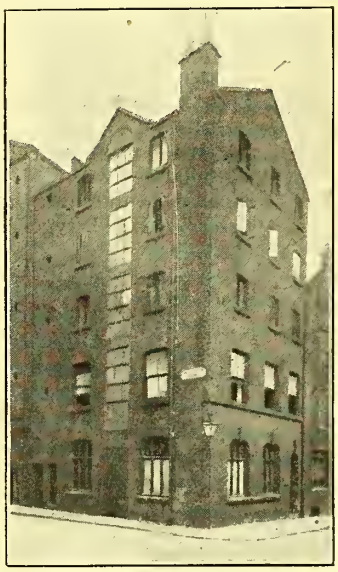
Returning to Manesty Buildings we started at the bottom and worked upwards. The whole of the basement was crammed with racks of bottles, but we were much struck with the neatness of everything. It must be a tremendous job to keep the stock of not only the large quantity, but the infinite variety, of bottles, and we were told that every bottle was accounted for and a proper card index system kept.

During the war, and even since, there have been anxious moments as to the supply of bottles, especially for such an important preparation as "Quinphos," so very large stocks have to be kept stored.

The next floor is taken up mostly by the Packing Department, but this being the ground floor there is also a Reception Office, a Telephone Room, a General Office and a Waiting Room.

The first floor we found taken up with orderly fixtures filled with all manner of goods, and here another staff was engaged filling chemists' orders. This floor also has a very handsome suite of offices occupied by the Directors, General Manager and their staffs.

The second floor was a revelation; it would, perhaps, be impossible to imagine a better utilisation of space than has been effected on this floor, which is entirely devoted to the Photographic Operating Department. Everything here is up-to-date, the latest appliances are in use and the Developing, Drying, Printing, Enlarging and Sorting Rooms are all neat and convenient and well-ventilated. A staff of some twenty-five specially trained young ladies, under an expert photographer, deal with thousands of spools and make tens of thousands of prints every month. Thompson & Capper, Ltd., claim that the reason for the vast increase in their Photographic business is not simply the fact of the excellence of their work, but the great care with which the orders are attended to, in that every print is religiously examined and, unless perfect, it is sent back to be re-done. They find that the only real objection to this is that it is apt to hold up the order for a little while, but they take this risk rather than send out one single bad print.



Tablet Factory,
Thompson & Capper, Ltd.

The third floor is used for the packing of "Quinphos." The persistent advertising of this well-known preparation has, of course, meant increased sales, and as "Quinphos" has always been known to be a wonderful specific for influenza, naturally when the distressing outbreak caused such ravages throughout the country last year the efforts of the staff were put to a severe test and all previous sales were beaten many times over. Although influenza has happily departed, the sales of "Quinphos" have pretty well kept up to the high level caused by the disease owing to its having become known to a still wider circle of people.

On the top and highest floor of all we leave business and find a large, light and airy dining-room for the staff, the meals being prepared in an adjacent kitchen.

It has always been the policy of the firm to make each member of the staff as happy as possible, and there is a staff tennis club, with two courts in Sefton Park inaugurated by the firm and now entirely self-supported by members. That this is much appreciated is proved by the numbers that take advantage of it. In the winter there is a staff dance which has become an annual event. Perhaps this sort of spirit helps to explain the long service of so many of the employees of Thompson & Capper, Ltd., ranging from 50 years downwards.

As mentioned earlier in this article, the accommodation at Manesty Buildings was soon outgrown, and a further warehouse was taken for the manufacture of tablets. Since then again fresh space has had to be found for the Machinery Department, and a visit to Thompson

Thompson & Capper, Ltd.

& Capper's works and showrooms at Binns Road, Old Swan, Liverpool, is convincing proof of the progress that is being made in all things relating to pharmaceutical machinery. Their stock of tablet-compressing machines and accessories, which is claimed to be the largest in the trade, in no small measure accounts for the briskness of the business transacted, coupled with the maintenance of quality which is always a "foreword" of the firm. As sole selling agents for the Stokes Machine Co., they have on view the latest types of Rotary Tablet Compressors. The "BB" type, with an output of 1,000 to 1,200 tablets per minute, suitable for work up to ½-inch diameter, claims considerable attention; also the "D" Model for larger tablets which require more pressure, and the "B" type, a model of the "BB," with an output of 400 to 500 tablets per minute, any of which are recommended with absolute confidence for reliability, noiselessness, and automatic action. Adjustments for weight and pressure are made while the machine is running, without the aid of tools.

Of the Single Punch types the "N" and "O" Models are shown, also the "H," a heavily geared machine for producing tablets up to 2-inches in diameter, this being greatly in demand for the manufacture of soup tablets and foods in tablet form.

Mixers in varying sizes, Drug Mills, Ball Mills, Power Mortars, Oscillating Granulators, Tablet Counters, Drying Ovens, Cooling Pans and Vacuum Dryers not only made the visit interesting, but proved most instructive on the score of labour-saving devices.

The small manufacturer has not been overlooked. The Hand type "Eureka" Machine was greatly in evidence, and produces tablets up to ½-inch diameter at the rate of 100 per minute. Suppository Moulds with an ingenious locking device, which enables the manipulator to disassemble in a few seconds in comparison with the old obsolete and cumbersome type. Dipping Bulbs for the manufacture of capsules can be made to any specification at short notice and are set up on neat discs of 50.



Packing "Quinphos."

Stills of all sizes with a production of from ½ gall. up to 25 gallons per hour for gas or steam supply are available for immediate despatch, and are guaranteed to produce distilled water free from all contamination at a very slight working cost.

In the Machine Shop punches and dies are manufactured to any design, and workmanship is guaranteed. Only the best steel is used and finest quality is combined with quick delivery.

In the Assembling Shop various machines were undergoing overhaul, and only after the most exhausting tests is work passed out as satisfactory.

Thompson & Capper, Ltd., as sole agents for the Hill Safety Razor Blade Sharpening Machine and the Hatfield Sharpening and Grinding Machine, had various types on view, and as business bringers it can be unhesitatingly said these machines have no equal owing to the ever-increasing number of safety razor blade users. They take up little space, and when placed in a window the attraction leads to publicity. These are worked from the ordinary electric lighting supply and are supplied with the necessary motor complete.

Thompson & Capper, Ltd., will be pleased to send descriptive matter about any machine on request.



A Corner of the Packing Department, Thompson & Capper, Ltd.

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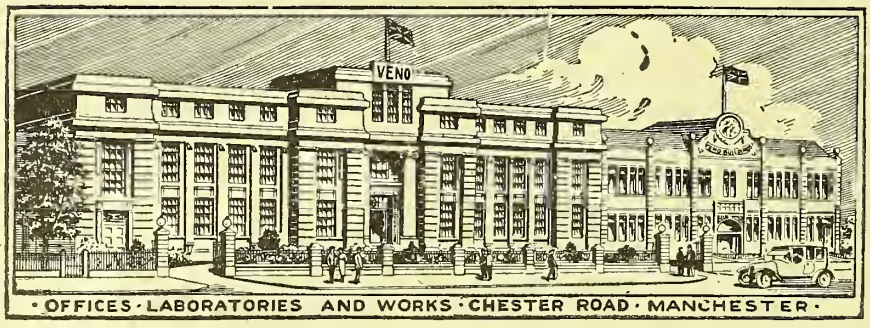
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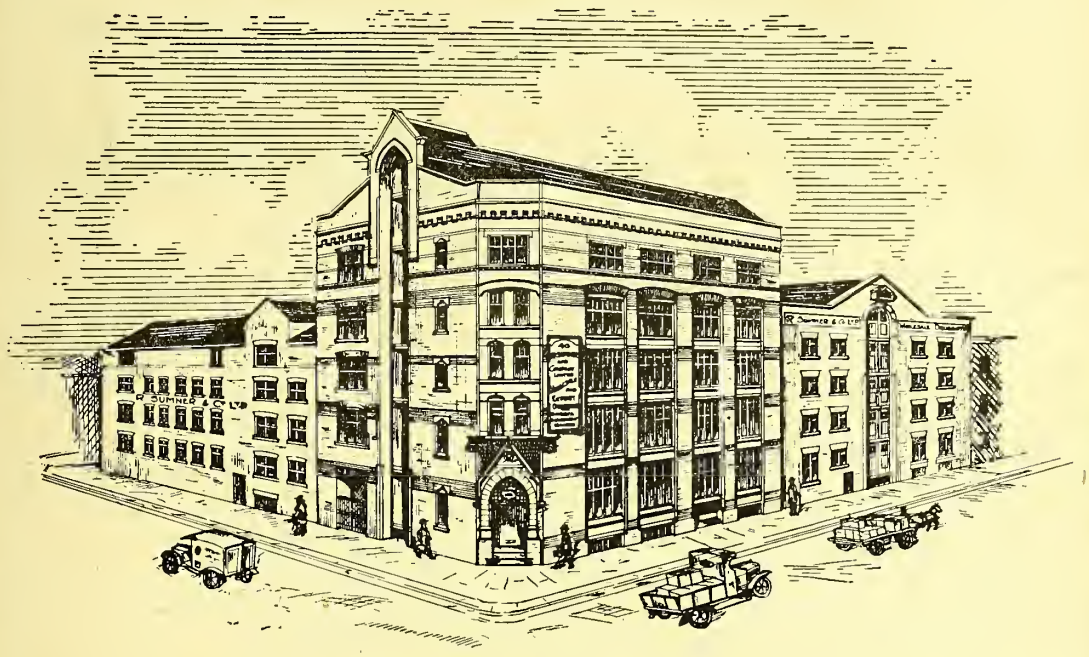
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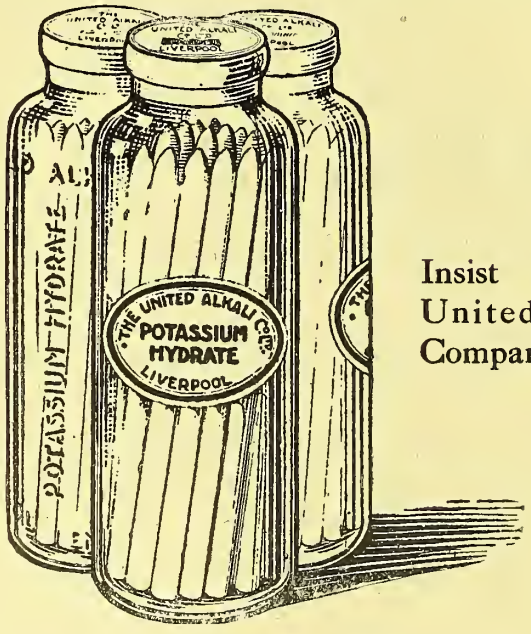
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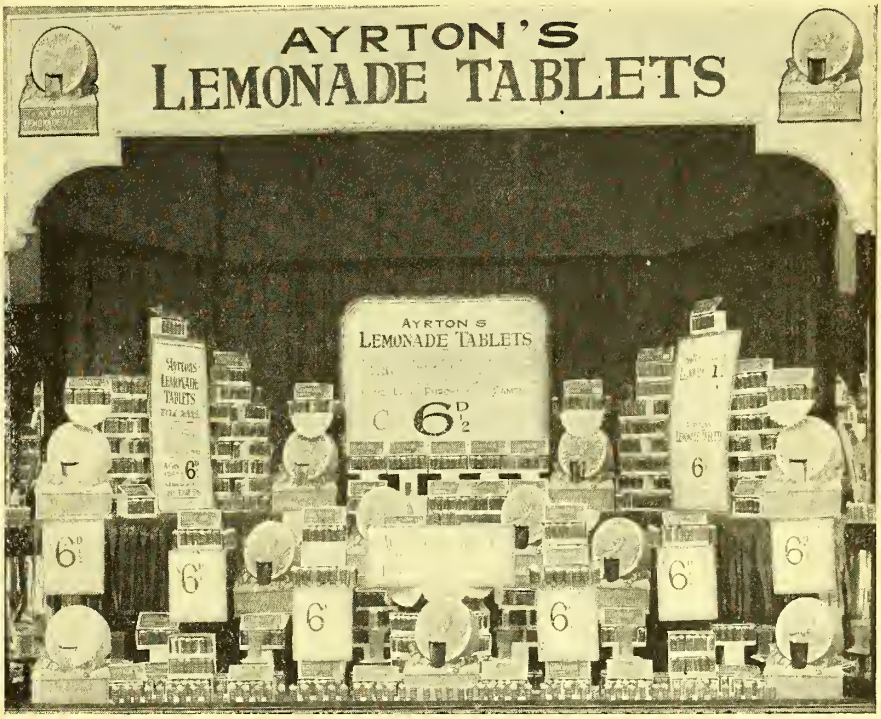
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AYRTON'S WEEKLY PAGE 15

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(The result of their exertions will be reproduced on this page next week).

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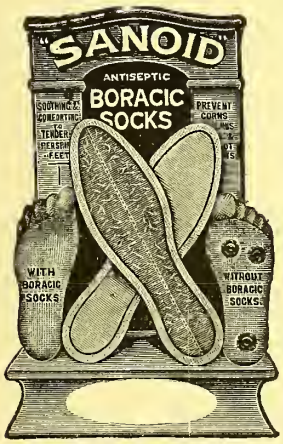
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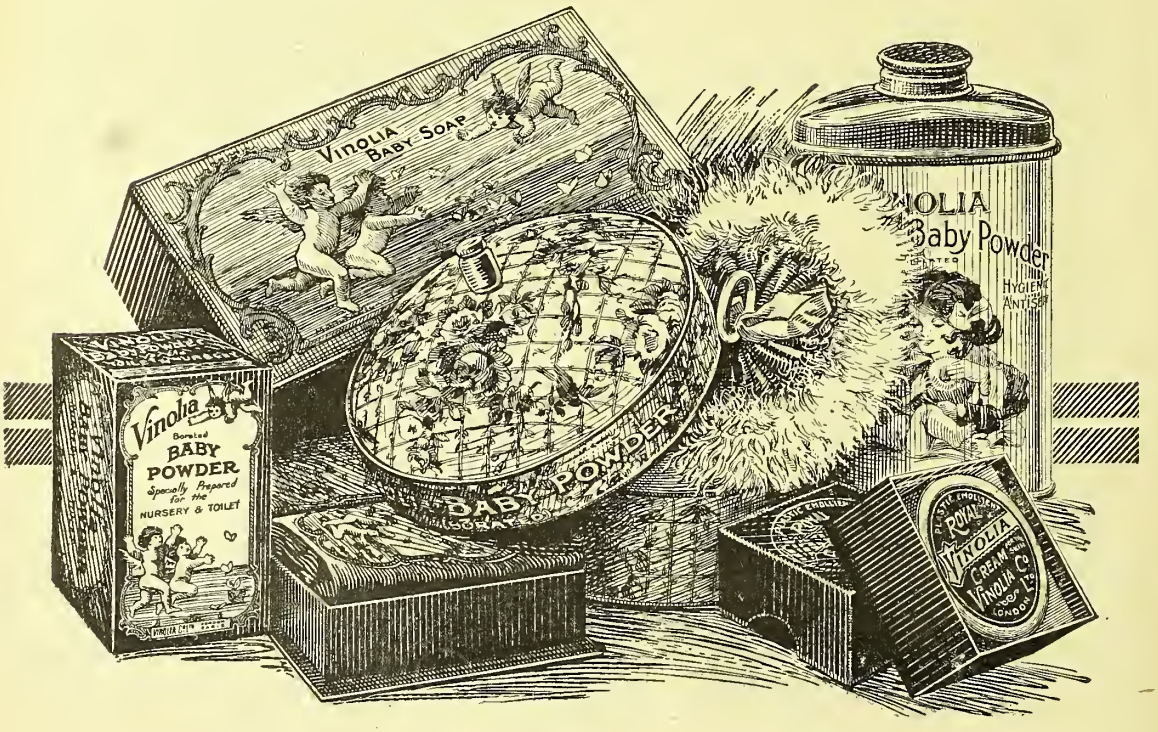
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Vinolia Baby Powder. *Ideal for Nursery Use. In Nursery Box with Puff,* **3/6**; *Sprinkler-Top Refills* **7½d.**

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Royal Vinolia Cream. *Invaluable in the Nursery. Antiseptic and healing. Boxes,* **1/3** *&* **2/-**



VINOLIA COMPANY LIMITED, LONDON.
Offices and Works: Bebington, Cheshire.

R V 460—29 T

Maw's Page

July 24, 1920. No. 458.

Exclusiveness

THE changing aspect of competition in modern pharmacy leaves unchanged the policy of the House of Maw.

The more strenuous character of competition in these days neither stifles the enterprise nor stays the progress of the illustrious House, but encourages it to further effort and ensures further success. We feel sure it will have the same effect on the pharmacist.

It is because the House of Maw follows the varying fortunes of the retail pharmacist with unswerving fidelity that it commands in increasing degree the reciprocal consideration of his trade support.

While others are increasing their clientèle by increasing the chemist's competitors, Maw's still stands the House for the Pharmacist—and the Pharmacist only.

In creating customers for Maw's goods, the pharmacist creates customers for the Pharmacy—not for the Hairdresser and Draper.

Telephone: "City 7" (Private Branch Exchange).

S. Maw, Son & Sons, Ltd., 7/12 Aldersgate St., London, E.C.1.

Telegrams: "Eleven Cent, London."

N. V. Chemische Fabriek "Naarden"

Bussum, Holland.

MANUFACTURERS OF AROMATIC CHEMICALS,
FLOWER OILS & TERPENELESS ESSENTIAL OILS.

HELIOTROPINE
AUBEPINE
NARCISSUS
EUGENOL
DIPHENYLOXIDE

Please apply to our Sole Agents for Quotations and Samples—

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Telephone: City 4719. Telegrams: "Gerbromco, Cent, London."

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FACTORY OF
Synthetic Perfumes
ALTSTETTEN—ZURICH.

Loritol (Muguet), Ionone (Violette), Geraniol, Citronellol, Rhodinol, Chirassol, Phenylethyl, Alcool, etc.

Specialities for fine perfumery

Ambre Concrete, Biancol, Birosine, Bouvardine, Capucine, Chene Royal, Heliotrope, Jacinthe, Idealone, Neroly, Raldeine, Roseine, Sweet Pea, Narisse, Orchidee, etc., etc.

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Brand

ESSENTIAL OILS

LEMON, ORANGE (Sweet & Bitter)
BERGAMOT :: MANDARIN

Guaranteed absolutely pure

The Brand that covers only Finest Quality Oils.

Manufactured by the old-established house of FRATELLI JUNG (Est. 1867) Palermo, Messina, Catania.

ASK YOUR USUAL SUPPLIERS
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or apply to the London Agents:

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SYNTHETIC OTTOS

"Zinyl" Brand (Regd.)

TRUE SYNTHETIC PRODUCTS

TOILET PREPARATIONS

¶ These Synthetic Ottos, by reason of their enormous concentration, are most economical in the manufacture of the above, and are, of course, far away stronger than the "concentrated perfumes" offered, under various fanciful titles, the basis of which consists of essential oils directed to be diluted with from 40 to 50 volumes of spirit.

Oriental Synthetic Otto

"ZINYL" BRAND.

This beautiful product has a most powerful heavy odour absolutely reminiscent of the Far East. It is a pronounced success, being already supplied to various well-known houses, and on account of its great strength is really economical in use.

17/6 OZ.

Extract from a correspondent's letter this week :

"This Oriental Synthetic Otto is a most beautiful and striking odour, "and we like it very much indeed ; it is excellent when used in "the manufacture of face powders and cold cream."

(A satisfactory repeat order follows.)

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Manufacturing Chemists and Wholesale Druggists,

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We manufacture exclusively ourselves all kinds of Terpeneless Oils, and invite inquiries from users throughout the world.

WE SPECIALISE IN TERPENELESS:

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Cinnamon
Clove
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Ginger
Juniperberry
Lavender
Lemon
Limes
Mandarin
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Orange
Peppermint
Petitgrain
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CINNAMIC ALDEHYDE
GERANIOL
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LEMON - BERGAMOT
ORANGE - MANDARINE.

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The Oils that have a Long Reputation for Quality.

In the manufacture of our Terpeneless Oils it was imperative that we secured the very finest Sicilian Oils to work upon. After several exhaustive tests we came to the conclusion that the "SPINELLI" brand of Sicilian Oils gave us the best results. As we were able to place large orders for our own needs with the manufacturers, we have pleasure in stating that they have entrusted us with their British Agency, and we offer to users of Sicilian Oils the benefit of our experience. There is quality in every package. Guaranteed Genuine Oils of authentic origin, and to conform to any analysis as to purity.

HOLLANDS DISTILLERY LTD.
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Pure Sicilian Oils.

LEMON
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Finest quality with a world-wide reputation.

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OIL OF HOP.
Singly and fractionally distilled.
HIGHEST CONCENTRATION AND PURITY GUARANTEED.
Prices, samples and information from the distillers:—
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And at
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SPANISH ESSENTIAL OILS

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OIL PEPPERMINT (Natural)

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OIL HEMLOCK
OIL BIRCH

Heliotropine Crystals C.P.
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Oil Wormseed, American.
Oil Wintergreen Leaf, U.S.P.

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Essential Oils, Chemicals and Drugs,
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Cables—"MAGLAUR."

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(Grasse, France),

Manufacturers of

ESSENCES & PRIME MATERIALS for MANUFACTURING PERFUMERS, CONFECTIONERS, ETC.

SYNTHETICS
ARTIFICIAL VIOLETS (MYRIONE)
Artificial Musk

INQUIRIES SOLICITED. LARGE STOCKS

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Agents for the UNITED KINGDOM & CANADA.

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"Minerva House," 26/27 Hatton Garden, London, E.C.1
our

SOLE AGENT for the UNITED KINGDOM

Mr. Mavlankar has been doing business with us for twelve years and is well acquainted with our various products. He has, also, an intimate knowledge of the Essence and Perfumery business.

We think this arrangement will be particularly advantageous to our friends, because Mr. Mavlankar will hold a large stock of our specialities, and will therefore be able to supply our customers without much delay. Inquiries and orders received through him will receive our prompt attention.

N. V. Polak & Schwarz's Essencefabrieken
Estab. 1889. **ZAANDAM (HOLLAND).**

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FAST TO LIGHT — ABSOLUTELY PURE

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BRADFORD.

ROURE BERTRAND FILS, GRASSE. *Established 1820.*

LAVENDER (French), SPIKE LAVENDER (French and Spanish)
NEROLI, GERANIUM (African and Bourbon), SANDALWOOD, PETITGRAIN (French and American), VETIVER (Java and Reunion), ROSEMARY, BOIS DE ROSE FEMELLE, YLANG, &c.
ORRIS CONCRETE and LIQUID.
ESSENCES, SOLIDES and LIQUIDS from flowers. RESINOIDS and POMADES.
We have Stocks in London of the most important Essential Oils and Perfumery Products.

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Makers of SYNTHETIC PERFUMES
and some of the finest original odours extant, for Sachets, &c.

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Wholesale Houses only supplied.



Associate your name with the name of

POIRET

His recent successful law action amply proved the great drawing value his goods possess.

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All New Advertising matter bears his name and will assist progressive Chemists to make easy, profitable Sales.

LOOK AHEAD!

Select your Christmas Perfumes while business is still quiet, and order only good branded lines that are certain to find a ready sale.

In "ROSINE" and "DE LUZY" PERFUMES you have a formidable range from 63/- to 5/- Retail—perfect in every way—Saleable and Profitable.

ROSINE LEADING LINES—

Pierrot Perfume...	28/6 *less* 33⅓%
Nuit de Chine	... 28/6 *less* 33⅓%
Coupe d'Or ...	... 33/6 *less* 33⅓%
Aladin... ...	... 47/6 *less* 33⅓%

Showcards and Test Samples free.

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Poudre	10d., 1/9, 3/3 *less* 33⅓%
Creme	1/3, 2/6, 3/9 *less* 33⅓%
Parfum (Flowers)	5/6 & 14/6 *less* 33⅓%
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HIGH CLASS TOILET PREPARATIONS



ADIANTINE (Reg'd)
A Herbal Hair Grower
9/6 per doz



BORALIA (Reg'd)
Dental Wash
15/- per doz



CRÊME de VENICE
A Liquid Vanishing Cream
11/6 per doz



DUPORTE'S BORACIC
TALCUM POWDER
5/- per doz



BORALIA (Reg'd)
Coconut Oil Shampoo
12/6 per doz



POUDRE de RIZ CARESSA (Rachelle, White & Pink)
A delicately perfumed & high class Face Powder
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CREAM of LILIES
a liquid Face Powder
7/- per doz



BRILLIANTINE de PARIS
Concrete
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4/- per doz

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An Eau de Cologne of intense fragrance, combining all the subtle qualities of a French essence with high-grade Eau de Cologne. An original production in the world of Perfumery. In handsome bottles, white or black leather capped. 8-oz. fluid capacity. **137/-** per dozen.

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Effective style, Gold and embossed Art label. Capped leather. A striking and most attractive line. ¼-litre fluid capacity, **135/-** per dozen. Minimum selling price, **15/-.**

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Following the style of original popular Continental makes.

2 oz., reputed	**32/-**	per dozen
4 ,, ,,	**60/-**	,,
½ pint ,,	**96/-**	,,
1 ,, ,,	**160/-**	,,
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Packed as above (very strong).

2 oz. reputed	**22/-**	per dozen
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ESTABLISHED IN 1695

THE ORIGINAL
EAU DE COLOGNE

Distilled in Paris by a Syndicate of English and French ex-Officers.

NOW AGAIN ON THE ENGLISH MARKET.

Sole Concessionaires:
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Your Customers will soon demand

Pasttella
Pearle and Nail
Poudre Poudre

The Pearle Poudre *gives minimum of* 53% *on outlay*

Nail Poudre *gives minimum of* 55% *on outlay*

Manufactured by Romaine LONDON

Prices:-
Pasttella Pearle Poudre
No 1 Large Size £1·5 6 per doz
No 2 Medium .... 12 9 "
No 3 Small .... 6 4½ "

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No 1 Size .... 7 9 per doz

Larger quantities at reduced rates
Daintily boxed in black and gold with red seal.
Attractive Showcards with each order

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BAY RUM

The genuine West Indian Bay Rum. The most delicate tonic for the hair, the skin, the bath.

Prompt delivery from the free harbour at Copenhagen, Denmark.

In casks of about 180 litres.

Apply to—
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MOUSLEY'S
"BEAVERPUF"
Patent Nos. 4931 and 4932.
The Ladies' Natty Friend.

B. quality Brown Fur, 3/11 each, Retail.



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Additional Powder Bags, 6d. each, Retail.

Revolution in Powder Puff Manufacture.
Thousands already sold.
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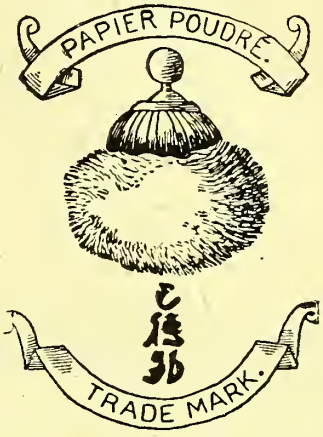
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British Made Goods.

Beware of Spurious Imitations

Note our Trade Marks.

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PAPIER POUDRÉ, LTD.,
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and in Paris.

WHITE, ROSE, or RACHEL Tints, 4d., 6d., 8d. and 1/4 sizes
Booklets, 2/8, 3/9, 5/-, and 10/- per dozen net respectively.

SUNBURN TINT, 8d. & 1/4 sizes only, 5/- & 10/- per doz. net.

REFILLS to Mirror Cases in White or Rachel ... ... **2/8** per doz. net.
8d. **SHAVING PADS**, for Use after Shaving (unscented), white only, **5/-** per doz. net.

POPPŒA ROUGE

A most popular line. (Regd.)

Made in booklet form. One size only, viz. **1/-** at **8/-** per dozen net.
Mirror Cases 1/4 at **10/-** per doz. **Refills** for same **6d.** at **3/9** per doz. net.

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EVAN WILLIAM'S
ORIGINAL
Henna Shampoo

Your Customers will insist on the
Evan Williams'
HENNA
SHAMPOO
having been taught by experience. Are you ready to meet their demands? Stock moves freely at a handsome profit.

Full particulars are included in The SHAMPOO SALESMAN, which is sent free on request.

The EVAN WILLIAMS CO., LTD.,
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ANZORA CREAM for greasy scalps, and ANZORA VIOLA for dry scalps, are splendid sellers, and offer you a good margin of profit. They are the two finest preparations in the world for men's hair. Order a supply to-day. Obtainable from all wholesalers.



TRADE TERMS:

12/- per dozen, retailed at 18/-
20/- „ „ „ „ 30/-

Attractive Showcards sent post free on request.

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Masters the Hair.

Anzora Perfumery Co. Ltd., Willesden Lane, London, N.W.6

"Jackel's Cream"



(without Grease)
for THE HAIR
Sold everywhere
Established 1883.

"Jackel's Cream" fixes the hair in any desired position; is unexcelled as a dressing and does not soil the headware. It removes Scurf and Dandruff, keeps the scalp healthy, and promotes the natural growth of the hair while maintaining its softness and brilliancy.

Prices for Wholesale and Export Houses on application.

CRYSTALLISED
1/9 CREAM 2/3
Trade Mark attached to each bottle.

Jackel et Cie (of Paris) Ltd.
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An Instantaneous & Amazing Success!

SILKODONO
for the HAIR & SCALP

SILKODONO is already an assured success. The Trade has responded to our Special Terms (which we repeat below) with the greatest enthusiasm, and this despite the fact that our big Press Advertising Campaign is only just commencing. We are simply inundated with orders—in fact, our entire stock of Silkodono, large as it was, did not last many days after our first advertisement appeared in this Journal. Our Factory is now working at full pressure and all orders are being dealt with in rotation. We hope customers will excuse any slight delays which may occur owing to this extraordinary demand. The call for Silkodono is simply amazing—it has surpassed our wildest dreams.

The big bottle in the beautiful wrapper has undoubtedly made a big hit with the trade. But just wait until the public see it! Silkodono is going to be your livest line—the sooner it is in your window, on your counter, or on your shelves the sooner you will appreciate this fact. Read the generous offers we make below and send us a trial order to-day.

Thousands of Free Samples will be offered to the public. Send for one now and try it for yourself. You will then offer Silkodono to your Customers with confidence.

We help you with beautiful Showcards, printed in 14 colours, Instructive Booklets on Silkodono, Hair Culture and Dummy Cartons.

Special Terms to Chemists who order before July 31

SILKODONO	SILKODONO	SILKODONO	SILKODONO
2/6 Size per doz. 1 10 0	2/6 size 3-doz. lot 4 10 0	4/6 size per doz. 2 14 0	4/6 size 3-doz. lots 8 2 0
BONUS	*BONUS*	*BONUS*	*BONUS*
2 extra Bottles 5 0	9 extra Bottles 1 2 6	2 extra Bottles 9 0	9 extra Bottles 2 0 6
£1 15 0	£5 12 6	£3 3 0	£10 2 6
Costing you 1 0 0	Costing you 3 0 0	Costing you 1 16 0	Costing you 5 8 0
Net Profit of 75% 15 0	Net Profit over 85% £2 12 6	Net Profit of 75% £1 7 0	Net Profit over 85% £4 14 6

Sole Manufacturers:

SILK'S TOILET COMPANY, Red Lion Street, London, W.C.1

Telephone: Holborn 3095. Telegrams: "SILPORANOB, HOLB. LONDON."

We do not Profiteer

at the Expense of the Retailer.

Push "PERMOL" and make a profit of 33⅓% plus a bonus of 1 doz. tubes per gross.

10/- per dozen post free
Packed in dainty cartons specially arranged for Counter Show.

Guaranteed Absolutely Pure.

PERMOL
DENTAL CRÈME

Antiseptic and Cleansing.

The Dainty Dentifrice that will pile up your profits.

FOR Permol PURITY

Registered Trade Mark.

On the P.A.T.A.

Send us a postcard and we will execute your orders in strict rotation.

Special Terms to Wholesalers

PERMOL PRODUCTS Co., Ltd.
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LEWISHAM, S.E.13.

All High-Class Chemists should stock

DENTIFRICE
LACOSTE

the well-known Liquid Tooth Cleanser for checking pyorrhœa.
Retail **3/-** and **5/-** per bottle.

Also the unrivalled
SAVON DENTAIRE LACOSTE
for cleaning Artificial Teeth Plates.
Retail **2/6** per pot.

Liberal Discount to the Trade.
ATTRACTIVE SHOWCARDS SUPPLIED.

Wholesale and Export:
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Hair Cream.

MADE UP IN TWO SIZES:
4 oz. retails at 1/3
8 oz. „ „ 2/-
Attractive Showcards supplied GRATIS.
From all Wholesalers, or direct from Manufacturers.

The . .
"CASSON BRAND"
COLD CREAM
LANOLINE
LAVENDER ICE

TRADE CASSON BRAND MARK

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Think it over!



THESE ARE JUST THE LINES YOU WANT.

"Leona" Series are of tip-top quality, beautifully packed, well advertised, leave you a good profit, and are on the P.A.T.A.

"LEONA" DENTAL CREAM

(Mint or Thymol)

Small Size ... Cost 4/6 per dozen Sell @ 7½d.
Large Size ... „ 8/- „ „ „ @ 1/3

Recommended by the Institute of Hygiene.

"LEONA" CREME DE BEAUTE

Cost 12/- per dozen Sell @ 1/6

A Delightfully Perfumed Vanishing Cream packed in handsome 2-oz. opal pots.

"LEONA" BRILLIANTINE (SOLIDIFIED)

Cost 8/6 per dozen Sell @ 1/-

Packed in beautifully embossed tins and cartons.

POUDRE "LEONA"

Cost 8/- per dozen Sell @ 1/-

Richly perfumed and packed in gold-blocked boxes.

Every Line is a work of art.

Ask your wholesaler to show them to you, and

YOU WON'T REGRET IT

Sole Manufacturers and Proprietors—
THE JACKSON CO., 172 St. JOHN STREET, LONDON. E.C. 1.

Enolin

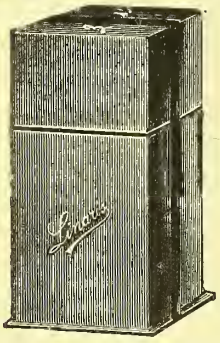
TOOTH PASTE "Strong" or "Mild"

THE SUPER PASTE

"Enolin" is also supplied in Powder Form - 6d. & 1s. Tins

Selling Agents for Provinces, Ireland and Export—
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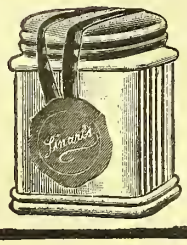
Sole Manufacturers and Proprietors—
A. & E. CARRERAS, LTD., Perfumers,
207 King Street, Hammersmith,
London, W. 6.



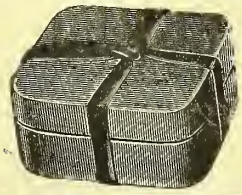


Linaris

BATH POWDERS
FACE POWDERS (*all tints*)
SKIN FOOD
BEAUTY CREAM
TONIC CREAM
VANISHING CREAM
BATH SALTS, etc. etc.



Linaris Dept. I **31 Westbourne Grove W.2.**



PUFFS of ALL KINDS in DOWN and WOOL.



SOLID FACE POWDERS
COMPLETE WITH PUFFS.
Inquires invited by makers.
F. SCHUTZE & CO., Ltd.,
BLACK BULL WORKS,
Caledonian Market, London, N.7.

PERFUMERS ! SHORTAGE OF LABOUR

Advertisers are prepared to undertake the blending of Shampoo, Tooth, and other Toilet Powders, in large or small quantities at lowest possible rates. Good workmanship and prompt delivery. Ingredients supplied if desired at lowest market prices. Write, stating requirements.

MARTIN & CO., 71 City Road, Finsbury, **London, E.C.1.**

Orisal Regd.

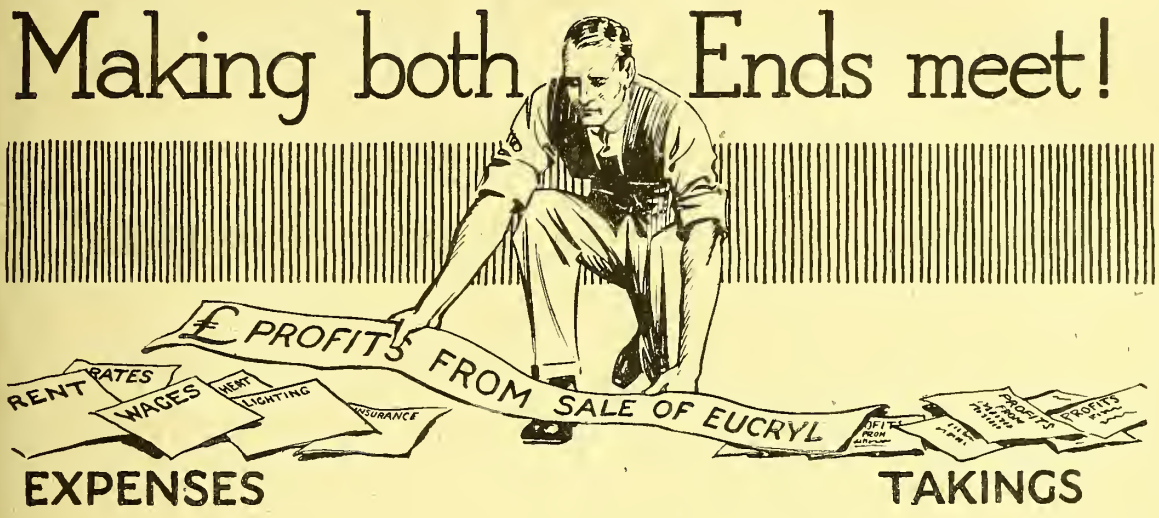
The successful Remedy for PYORRHŒA.
Prescribed by the Dental Profession.

PRICES.

Wholesale (including Government Duty)			Retail
Dental Paste	22/- per doz.	„ 6d.	2/6 per tube
Mouth Wash	44/- „	„ 1/-	5/- per bottle.
Special Brush	24/- „	... ...	2/6 each.

Attractive discounts to retailers willing to push these Specialities.
Of Wholesalers, or direct from
ORISAL Ltd., 77 George St., Portman Sq., W.1

Making both Ends meet!



IN these days of high expenses it is absolutely essential that you should handle quick-selling lines—lines that are in constant demand and which bear a good profit. Under this heading undoubtedly comes EUCRYL DENTIFRICES, for they are efficient, hygienic and reliable products.

The dentists recommend Eucryl dentifrices, the public want them, and they are well advertised.

Stock EUCRYL freely. Display it prominently, and so secure your share of the big profit.

If you are short of stock, send us a postcard.

EUCRYL LTD., 138 Borough, S.E.1

Telegrams : "EUCRYL, SEDIST, LONDON."
Telephone : HOP 2268.

A. BOURJOIS & Cie, Ltd.

66 CARTER LANE - LONDON, E.C.4.

Please note that the prices of

Poudre de Riz de Java (Bourjois)

are as under :

2/- size. No. 45		1/3 size. No. 495	
1 doz. -	16/- per doz.	1 doz. -	11/- per doz.
6 „ -	15/9 „	6 „ -	10/9 „
12 „ -	15/6 „	12 „ -	10/6 „

The P.A.T.A. prices for Java Powder have been increased to **2/-** and **1/3** per box.

May 1, 1920.

The Perfect Paste with the Pleasant Flavour.

Anglodol

Dental Paste

A Perfect Dentifrice.
Pleasant to the taste.
Profitable to the Retailer.

Retail Price, 7½d. and 1/3.

Window display terms on application.

ANGLODOL, LTD., BERKHAMSTED.

Telephone: BERKHAMSTED 138. *Cables and Telegrams:* "ANGLODOL BERKHAMSTED."

VASELINE

(*Trade Mark*)

—

We are now in a position to execute all orders for—

"VASELINE"
„ Analgic
„ Borated Petroleum Jelly
„ Camphorated Petroleum Jelly
„ Capsicum Petroleum Jelly
„ Carbolated Petroleum Jelly
„ Eucalyptol Petroleum Jelly
„ Mentholated Petroleum Jelly
„ Oxide of Zinc Ointment
„ Hair Tonic
„ Camphor Ice
„ Cold Cream

CHESEBROUGH MANUFACTURING CO. CONS'D.

42 HOLBORN VIADUCT, LONDON, E.C. 1.

DEARBORN

LIMITED

37 Gray's Inn Road, LONDON, W.C.

Toilet Specialities.

	Price per doz. to Retailer.	Selling Price P.A.T.A.
PILENTA SOAP - A complexion soap.	10/-	1/-
PROLACTUM - - For the lips.	10/-	1/-
PARSIDIUM JELLY For wrinkles.	10/-	1/-
ALLACITE of ORANGE BLOSSOM A dressing cream.	22/6	2/6
BORANIUM - - A hair tonic.	22/6	2/6
CLEMINITE - - For a face lotion.	22/6	2/6
COLLIANDUM - - For a face tint.	22/6	2/6
PERGOL - - - A deodorant.	22/6	2/6
STALLAX - - - For a shampoo.	22/6	2/6
JETTALINE - - For clearing the skin.	31/6	3/6
PHEMINOL - - A depilatory.	36/-	4/-
MENNALINE - - For the eyelashes.	36/-	4/-
MERCOLIZED WAX A face cream.	31/6	3/6
STYMOL - - - For oily complexions and blackheads	36/-	4/-
BARSYDE - - Dandruff eradicator.	22/6	2/6
TAMMALITE - - For grey or faded hair.	22/6	2/6
LIQUID PERGOL - To check excessive prespiration locally.	31/6	3/6
BICROLIUM - - For whitening the hands.	22/6	2/6
HARAPOSA - - Nut oil shampoo.	22/6	2/6

STOCKED BY ALL WHOLESALE HOUSES

COLONIAL DEPOTS AND AGENCIES.

AUSTRALIA:
ALL WHOLESALERS, and
DEARBORN, Ltd., Grace House, Clarence Street, Sydney.

SOUTH AFRICA:
LENNON & CO., Ltd. (Cape Town)
SIVE BROS. & KARNOVSKY, Ltd. (Johannesburg)

INDIA:
KEMP & CO., Ltd. (Bombay)
THE INTERNATIONAL TRADING CO., Princess Street (Bombay)
R. MACLURE (Madras)
SMITH, STANISTREET & CO. (Calcutta).
MEHTA BROS. (Calcutta)
JAMNADAS BROS. (Bombay)

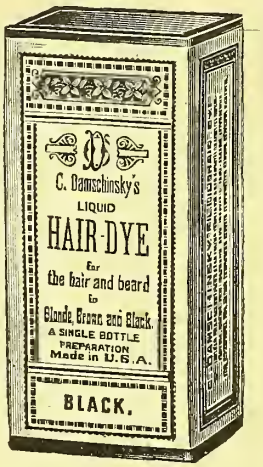
NEW ZEALAND:
SHARLAND & CO., Ltd. (Auckland & Wellington)

SOUTH AMERICA:
DEARBORN, Ltd., Calle Salta 264, Buenos Aires.

C. DAMSCHINSKY'S

AMERICAN LIQUID DYE.

Single Preparation for the Hair and Beard.



This excellent Dye has an enormous Sale all over the World.

MADE IN
FIVE NATURAL SHADES,
BLONDE, LIGHT BROWN,
BROWN, DARK BROWN,
AND BLACK.

2/- Size 15/- per doz. net.

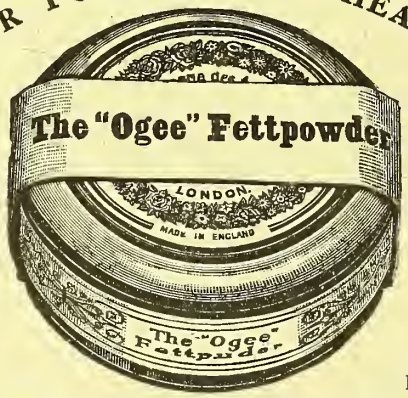
3/- „ 22/- „ „ „

SIMPLE TO USE.
WILL DYE
RED, GREY OR FADED HAIR
TO THE DESIRED SHADE
IN A FEW MINUTES.
IT IS NOT A BLEACH.
WILL NOT DYE DARK HAIR
LIGHTER.

From all Wholesale Houses or direct from sole British Agents :

OSBORNE, GARRETT & CO., LIMITED,
LONDON, BIRMINGHAM AND GLASGOW.

THE "OGEE" FETTPOWDER.
THE PREMIER POWDER FOR THEATRICAL USE.
THE Ogee
THE Ogee



In White, Rose, Natural and Rachel.

PRICE **12/6** PER DOZEN.

PROPRIETORS OF
THE CELEBRATED "OGEE" BRAND OF GREASE PAINTS,
AND THEATRICAL PERFUMERY.

OSBORNE, GARRETT & CO., LIMITED,
BIRMINGHAM. **LONDON, W.** GLASGOW.

Do You Serve the Discriminating Public?

If you do—you can best retain their custom and maintain a well-earned reputation by stocking

COOK'S PURE TOILET SOAPS

which meet the approval of the most fastidious,

COOK'S MEDICATED SOAPS

that have received the commendation of the Medical and Nursing professions, and

COOK'S DISINFECTANTS

that have won world-fame by sheer merit.

Please send for our complete price lists.

Edward Cook & Co.
LIMITED,
Bow, London, E. 3.



ARGUMENT No. 5

TO stock your shop with unknown and unadvertised goods is a rash speculation. Yours is the blame if your customers are dissatisfied. You lose if your goods do not sell quickly. The steady demand for Pears' productions ensures a quick return on your outlay. Our name is a guarantee that they will give satisfaction.

Pears' goods are a gilt-edged investment

Pears SOAP

Correct Retail Price
***7d.** per Tablet*



A. & F. Pears Ltd.
71-75
New Oxford St.
London, W.C.1.

Delphinus

TOILET PREPARATIONS

Face Cream. Dental Cream.
Brilliantine (Solid & Liquid).
Pomade Hongroise. Nail Polish.
Shampoos. etc.

Products of Unvarying Excellence

Prepared by
The Delphinus Mfg. Co.
45 Edward Street, Brighton.
Cables & Wires: Hongroise, Brighton.

We do not incur heavy expenses in advertising to the public, but prefer to give our Clients the benefit of increased profits.

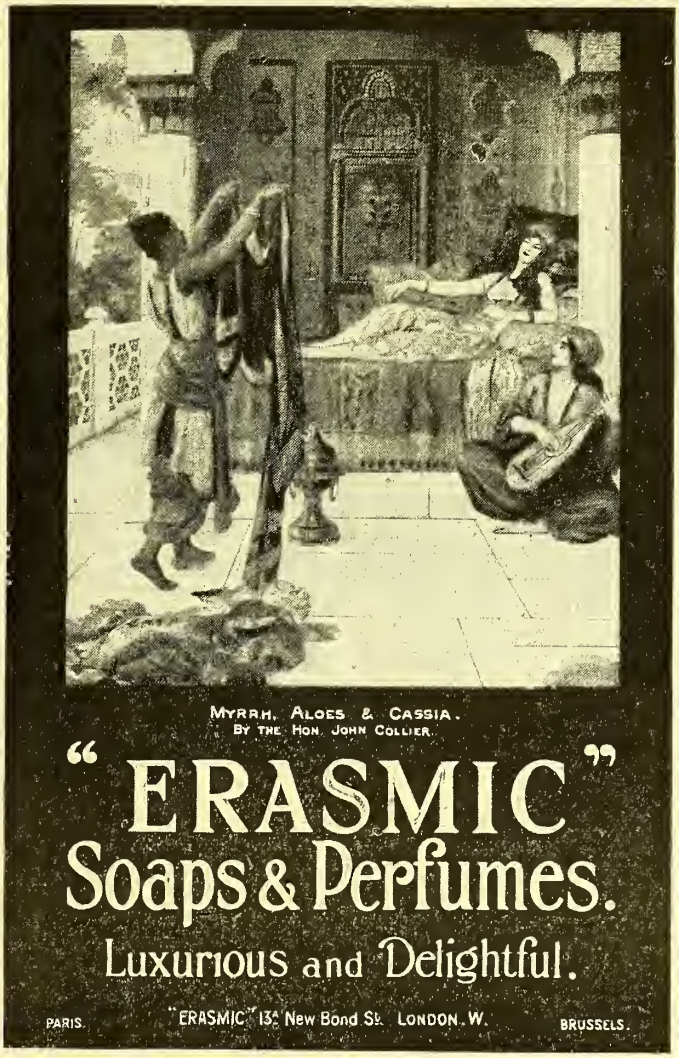
Sole Agents for Scotland :
Messrs. HENDRY & SMITH & Co.
83 Renfield Street, GLASGOW.

BE WISE! *Write us* **TO-DAY.**

Delphinus TRADE MARK.

COPYRIGHT.

Original Painting exhibited at the Royal Academy, London, 1919



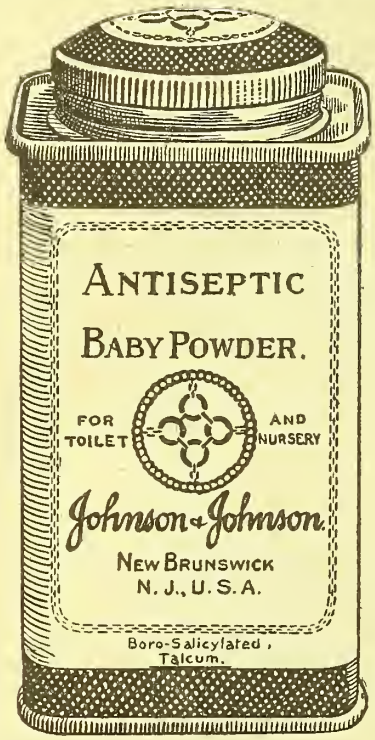
Original Painting exhibited at the Walker Art Gallery, Liverpool, 1919

In view of our Big Poster and Press Advertising Campaign, we think it would be to your advantage to display our beautiful new Toilet Soap and Shaving Stick Showcards on your counter and in your windows.

Please let us know your requirements.

Erasmic, Perfumers, Warrington.

SOLD THE WORLD OVER.



Antiseptic TOILET & BABY POWDER

JOHNSON & JOHNSON
British - Manufacture.

Made from the Best Talcums and Delicately Perfumed.

Bonus given for order of 2 gross and window display.

For particulars apply to—

JOHN TIMPSON & Co., Ltd.
104 Golden Lane - - E.C. 1.

SALES
ALWAYS INCREASING.

INDIAN PERFUME BRICK

KEEPS AWAY MOTH.
LASTING & FRAGRANT.

PERFUME BRICK

FOR LINEN CUPBOARD AND WARDROBE.
On the P.A.T.A. *Retail Price* ***6d.***

WANDA TOILET PUMMICE.
WANDA NAIL POLISH.
WANDA ONE-DROP PERFUME.

Of the Makers:
WILLIS, LOW & DRUIFF, LTD.,
33 Percy St., London, W. 1.
AND ALL WHOLESALERS.

Jewsbury & Brown's

MANCHESTER,

Non-alcoholic Cordials

Dental Preparations

WHOLESALE AGENTS:

For London, Home, Eastern and Western Counties
ROBERT W. PHILLIPS, Ltd.,
Craven House, Kingsway, LONDON, W.C. 2.

For Scotland:
KERR, PATON & CO.,
217 St. Vincent Street, GLASGOW.

For South and Mid-Wales:
THE STRETTON HILLS MINERAL WATER CO.,
CHURCH STRETTON, Shropshire.



The Goods that Sell

You know quite well that Gibbs preparations do not stay on your shelves—this is because they are *made for the public*; the preparations themselves are right, the quality is uniform—you have never heard of a "dud" preparation bearing the name of Gibbs. The people have learned that by asking for "Gibbs" they get what they want.

Another reason is because Gibbs advertising and selling schemes constantly keep these preparations before the eyes of over ten million people—your Pharmacy is a direct link in these schemes. The public associate YOU with GIBBS—the result being to our mutual satisfaction.

The adjoining column will show you that our advertising is continuing as vigorously as ever. Keep a watchful eye on your stocks that you may reap your full share of the benefits.

D. & W. GIBBS, LTD. (Dept. S 8),
Cold Cream Soap Works, London, E. 1

GIBBS August Announcements will appear in these Influential Media.

Scientific Press

British Dental Journal	British Journal of Dental Science
Dental Record	Dental Surgeon
Dental Practitioner	

National Press

Daily Mail	Illustrated London News (2 colours)
Daily Chronicle	John Bull
News	Daily Mail Fash. (3 colours)
Daily Mirror	Coming Fashions
Daily Sketch	Passing Show
Punch (2 colours)	
Sphere (2 colours)	

Provincial Press

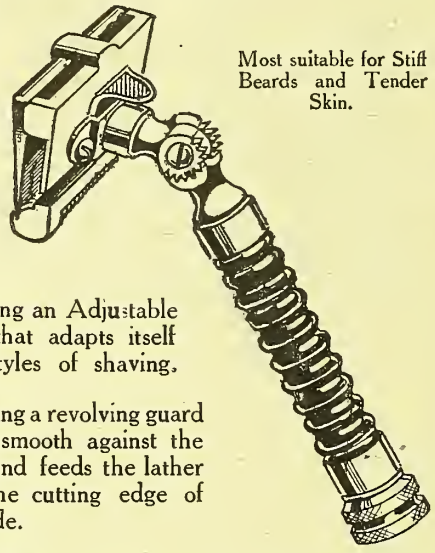
Newcastle Evening Chronicle
Manchester Evening Chronicle
Yorkshire Evening Post
Yorkshire Telegraph and Star
Cardiff Evening Express
Glasgow Evening Times
Edinburgh Evening Dispatch
Dundee Evening Telegraph

Appealing to upwards of TEN MILLION READERS throughout the United Kingdom.

THE WILKINSON SWORD CO. LTD.,

of **53 PALL MALL, LONDON,** *are the only manufacturers of the*

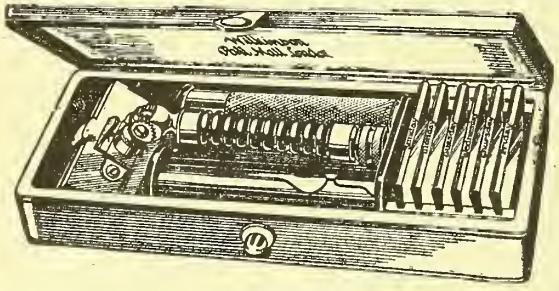
WILKINSON NEW MODEL SAFETY SHAVER.



Most suitable for Stiff Beards and Tender Skin.

In neat Leather Case with SEVEN real lasting SOLID BLADES.

THERE'S A POWER BEHIND EACH EDGE.



Possessing an Adjustable Head that adapts itself to all styles of shaving.

Possessing a revolving guard that is smooth against the cheek and feeds the lather on to the cutting edge of the blade.

THE MOST UP-TO-DATE SHAVER IN THE WORLD.

WILKINSON'S CELEBRATED SWORD-STEEL RAZORS

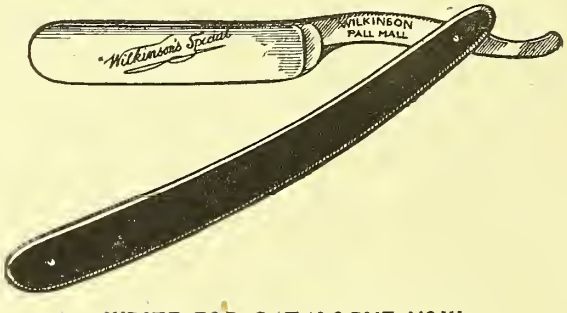
SWORD STICKS



IN LARGE VARIETY.

Are famous throughout the world, and are renowned for their SUPERFINE EDGE.

"SPECIAL." "W. & CROWN." "LANCE."



WRITE FOR CATALOGUE NOW.

WILKINSON'S DOUBLE ACTION STROPPING MACHINE adds keenness and life to your RAZOR.

All Orders and Inquiries to—

THE WILKINSON CUTLERY Co., Ltd.,

"Tudor House," Rathbone Place, Oxford Street, London.

"CUTEX"

Manicure Preparations

Kindly note the following Reduction in Prices.

Retail Prices will come into operation from August 1.

No.		Doz.		Each
1.	The "Ideal" Cuticle Remover, small	18/–	Retail	2/–
2.	The "Ideal" Cuticle Remover, medium	36/–	,,	4/–
4.	Nail White	18/–	,,	2/–
5.	Nail Polish Cake, white	18/–	,,	2/–
6.	Nail Polish Cake, pink	18/–	,,	2/–
7.	Nail Polish Cake, trial size	5/6	,,	7½d.
8.	Nail Polish Powder	13/6	,,	1/6
9.	Nail Polishing Paste, pink	18/–	,,	2/–
10.	Nail Polishing Paste, plain	18/–	,,	2/–
11.	Liquid Nail Enamel	22/6	,,	2/6
13.	Cuticle Comfort	18/–	,,	2/–
14.	Nail Bleach Powder	18/–	,,	2/–
15.	Nail Rouge	18/–	,,	2/–
16.	Compact Manicure Set	27/–	,,	3/–
17.	Travelling Manicure Set	84/–	,,	9/6
18.	Boudoir Manicure Set	168/–	,,	19/–
31.	Cold Cream	18/–	,,	2/–
22.	Nail Polish Stick in Metal Tube	13/6	,,	1/6

Henry C. Quelch & Co.

4-5 Ludgate Square, E.C. 4

SHAVING BRUSHES OF QUALITY



MANUFACTURED BY

F. LAVISTA & FREEMAN,

10 MOOR LANE, FORE STREET,

LONDON, E.C. 2. Phone: LONDON WALL 1656. Wires: "SPAZZOLA, BARB LONDON."

And Forest Brush Works, Walthamstow, Essex.

We are now in a position to deliver our BEST LONDON-MADE Shaving Brushes in Four Qualities, as under:

BONE HANDLES. STANDARD SIZES.

Series A. Pure Badger. Series C. Pure Badger and Hair.
„ B. Pure White Bristle. „ D. Imitation Badger.

Wholesale and Export.

APPLY FOR PRICE LIST.

G. B. KENT & SONS, LTD.

Are known the World over as the Largest Manufacturers of

BEST BRITISH BRUSHES

Please write for full Particulars to—

75 Farringdon Road, E.C. 1.

THERE is an active demand for wholesome "BRITISH-MADE" SHAVING BRUSHES to displace the **TAINTED FOREIGN GOODS,** which cannot be guaranteed free from disease. You are safe in carrying in stock—

IGEN REGD BRAND **Shaving Brushes**
BRITISH MADE WARRANTED HYGIENIC

Wholesale & Shipping ONLY.

Complete variety of PATTERNS.

MANUFACTURED BY

THE FRAM MNFG. CO., LTD.
BIRMINGHAM, ENGLAND.

FACE CREAM. TOOTH POWDER. NAIL POLISH
„ POWDER. „ PASTE. HAIR CREAM
BRILLIANTINE, Solid and Liquid. PERFUMES
VIOLET POWDER. TALCUM. TOILET OATMEAL.
SHAMPOO POWDER & LIQUID. MASSAGE CREAM

Your own formula prepared, or we can supply ingredients if desired.
Send for samples and quotations.

A. CONNELL & CO., 3 Jewry Street, LONDON, E.C.3.
PHONE—AVENUE 1945.

BRUSHES

The Holiday Season is in full swing, and articles for the Toilet are in constant demand. The following items are strongly recommended as good sellers — try an assorted parcel.

HAIR BRUSHES—

No. 553.	Satinwood back	12 rows, bristle	per doz. **45/-**
,, 554.	,, ,, ...	11 ,, ,, long cut	,, **57/-**
,, 555.	Ebonised wood	10 ,, ,, ,, ...	,, **57/-**
,, 561.	Real ebony	9 ,, ,, ,, ...	,, **102/-**
,, 557.	,, ...	13 ,, ,, ,, ...	,, **108/-**
,, 550.	,, ...	11 ,, ,, ,, ...	,, **126/-**
,, 558.	SPECIAL LINE	8 ,, whalebone	,, **36/-**

NAIL BRUSHES—

No. 501.	Polished wood backs, assorted bristle and fibre	per doz. **8/6**
,, 504.	,, ,, with handle ,, ,, ...	,, **8/-**
	The "Orlwara," octagon shape	,, **9/6**

TOOTH BRUSHES—

		No. 700	No. 701	No. 702	No. 705
Bone handles	4 rows ... ... per doz.	**6/-**	**7/-**	**8/-**	**10/6**
			No. 704	No. 707	
Celluloid handles	4 rows ... ... per doz.		**6/-**	**7/6**	

SHAVING BRUSHES—

Bone handles, hog hair	per doz. **14/-**
,, imitation badger	,, **18/-**

New Illustrated Price List post free on application.

BURGE, WARREN & RIDGLEY, LTD.

91/92 GREAT SAFFRON HILL - - - - - - - LONDON, E.C.1

We Manufacture all we sell. **We have representatives in Manchester, Glasgow & Ireland.** **Wholesale & Shipping only supplied.**



MANICURE SETS

MANICURE PARTS

HANDLES

NAIL FILES

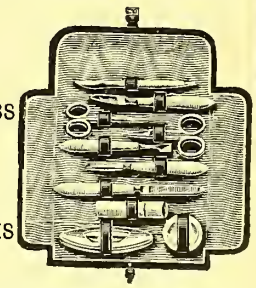


DRESSING COMBS

DUST COMBS

BRUSH BACKS

ERINOID ARTICLES



MYERS, LUMOS & CO.,
Sales Offices - 35/6 Aldermanbury, E.C.

Ring up City 3526.

Factories:
Islington & Finsbury Park, London, N.

C. MELIN & CO.

ESTABLISHED 1865

7 India Street, Crutched Friars, London, E.C.

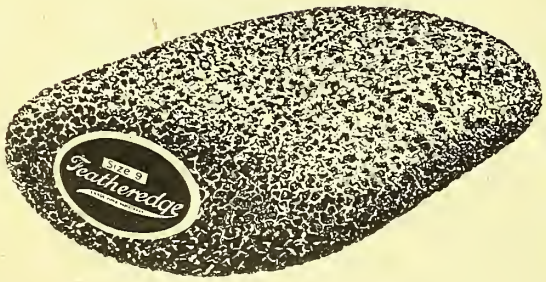
supply GLASS AMPOULES, TUBES and LAMP BLOWN ARTICLES

OF EVERY DESCRIPTION. PROMPT DELIVERY.

DIRECT FROM THE WORKS. :: WHOLESALE & EXPORT.

Featheredge
TRADE MARK

RUBBER SPONGES



Are durable and do not harden. When used with soap, they make a delightful lather.

Obtainable of all Wholesale Druggists' Sundries Houses

MARKT & CO., LONDON, LTD.

American Merchants

SOLE IMPORTERS

98-100 CLERKENWELL ROAD,
LONDON, E.C. 1.

VULCANITE

CELLULOID

HORN

COMBS

VERNON POWELL, Ld.

THE *Comb Specialists*

9-10 St. Andrew's Hill,
London, E.C. 4.

GALALITH

BEWARE!!

ANTHRAX

Is an EVER-PRESENT DANGER!

Be on the safe side and stock

NONE BUT OUR SHAVING BRUSHES

and Camel Hair Pencils.

All Guaranteed FREE of ANTHRAX.

We also stock

COMBS - PUFFS - BAG PUFFS
Bone and Ivory NAIL FILES, and all Manicure Requisites and Sets.

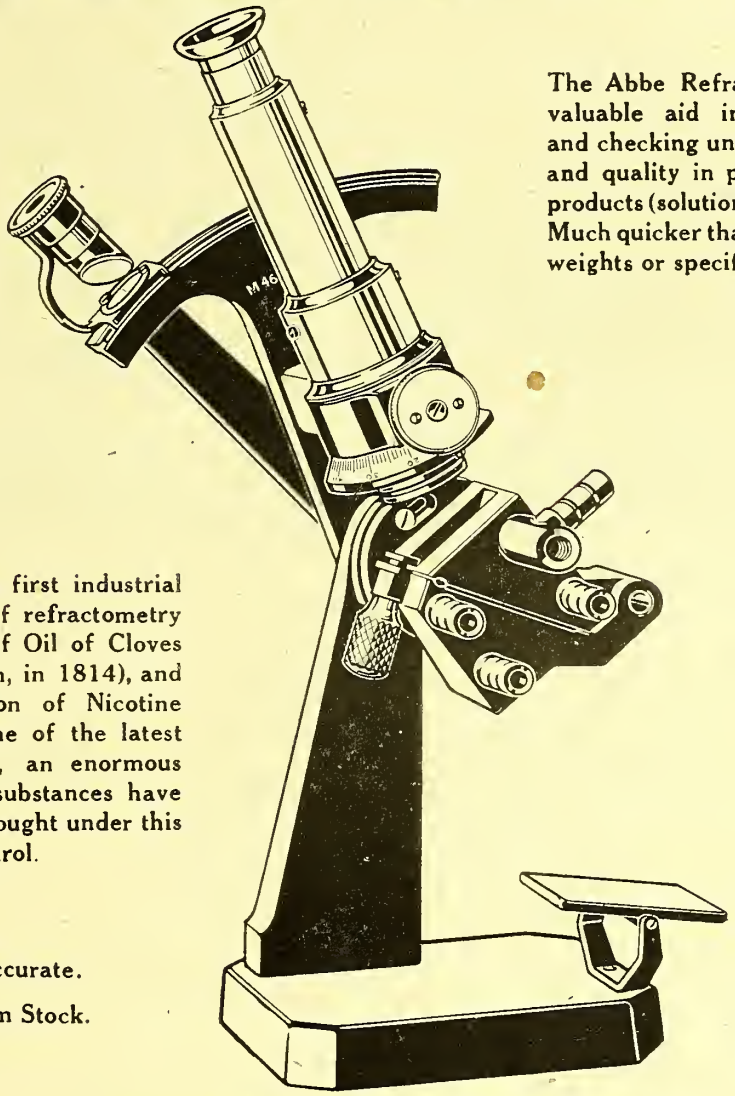
Wholesale and Export only Supplied.

A. E. DEPRETER,

24 HOLBORN, LONDON, E.C.1

Phone: Holborn 3182. Grams: "Aedeprelon, Smith, London."

The ABBE REFRACTOMETER



The Abbe Refractometer is a valuable aid in maintaining and checking uniform strength and quality in pharmaceutical products (solutions, syrups, etc.) Much quicker than taking dried weights or specific gravities.

Between the first industrial application of refractometry (the testing of Oil of Cloves by Wollaston, in 1814), and the estimation of Nicotine by Fryer (one of the latest applications), an enormous number of substances have now been brought under this mode of control.

Rapid and accurate.

Delivery from Stock.

Descriptive booklet on application from the Makers—

ADAM HILGER, LTD.

75a, CAMDEN ROAD, LONDON, N.W.1.

JOB BROTHERS

GUARANTEED PURE GENUINE NEWFOUNDLAND NON-FREEZING MEDICINAL COD LIVER OIL

IS THE FINEST OIL PRODUCED

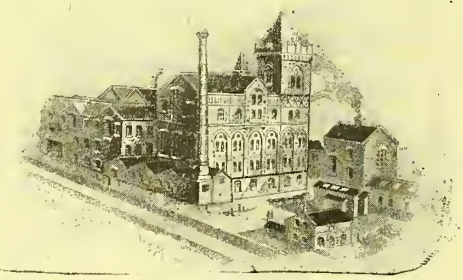
It is perfection in colour, smell, taste and absolute purity.
Manufactured from the finest fresh Cod Livers on same day as fish caught.

WHOLESALE ONLY

JOB BROS., Manufacturers, Tower Building, LIVERPOOL

Telegraphic Address: "JOB LIVERPOOL" Tel. 1039 CENTRAL

And of ST. JOHN'S, N.F. Established 1780.

"John  Bull" (REGD.)

MALT EXTRACT

and

COD LIVER OIL

Does not separate.

Supplied in Bulk, Jars, Cardboard Containers, &c., for Wholesale and Export only.

PAINE & CO., LTD., ST. NEOTS, HUNTS.



No "Slack Season" with Sanagen

"I am taking SANAGEN *regularly*, as it is doing me a lot of good. I would not miss taking SANAGEN. Have taken it *3 times daily for the past two months*, and mean to continue as I find it keeps up my strength."

The reason there is no "slack season" with SANAGEN may be "read" from the above typical extract from letters received by every post by the Sanagen Co., Ltd.

IT PAYS WELL TO SELL THE FIRST TIN OF SANAGEN—BECAUSE EVERY SUCH TIN IS THE FIRST OF A LONG SERIES OF SALES OF FURTHER TINS. And

Sanagen
THE BRITISH NERVE FOOD

Sales make 50% Profit

4 oz.	8 oz.	16 oz.
Cost 2/-	Cost 3/4	Cost 6/4
Sells 3/-	Sells 5/-	Sells 9/6
Profit 1/-	Profit 1/8	Profit 3/2

SALES AID CARRIAGE PAID ON REQUEST

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LONDON, E.C. 4

112E

Is it worth your while to increase your Sales by £2 14s. 0d. a week, and your profits by nearly 20/- ?

M. I. M. will do this for you—customers tell us the sales are "wonderful," and our repeat orders prove that this statement is not an exaggeration.

M. I. M.

"MADE IN A MINUTE."

LEMONADE POWDER.

Makes Half-a-gallon of

Refreshing Lemonade

by the simple addition of cold water.

NO SUGAR REQUIRED.

Packets **4½d.** *each.*

This small reproduction of one of our Window Bills tells the story of M. I. M.'s success.

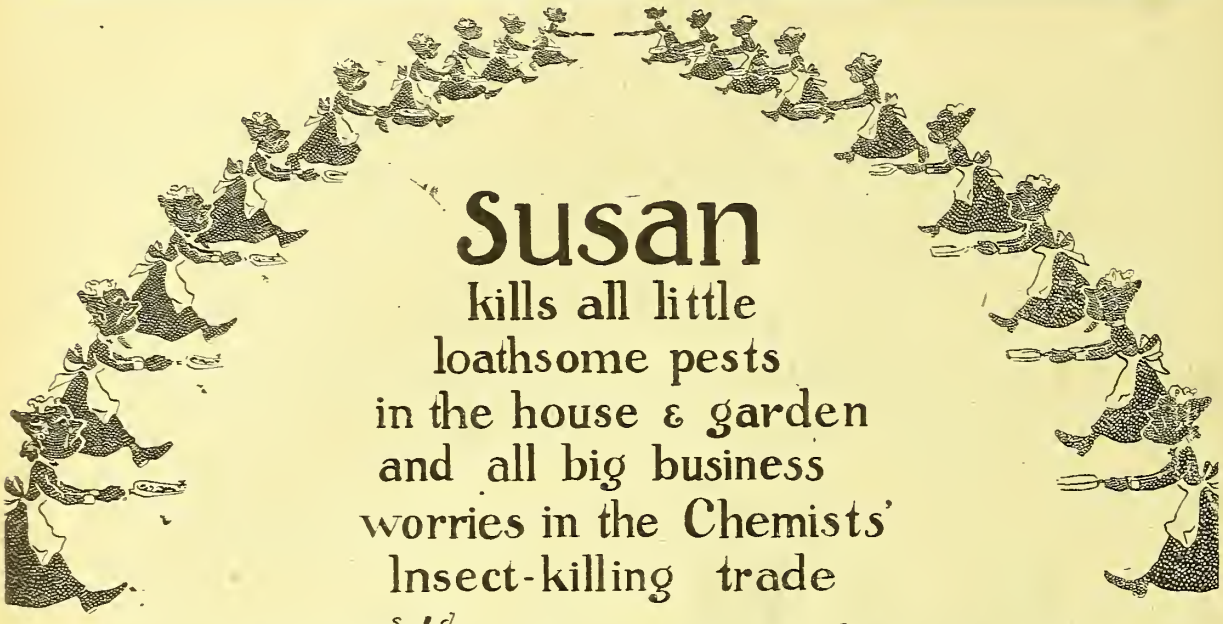
One gross costs you **36/-** (less **5%** for cash in 7 days) and sells for **54/-**, giving a profit of **19/9.**

One of the 6-dozen sales-compelling outers in the window, together with two or more window bills—and another outer on the counter will start the sales—repeat orders will keep them going.

M. I. M. is most attractively packed—the appearance helps to create sales.

Let us send you a trial gross. They will not become "dead stock."

RAYMET & Co.,
Limited,
507-509 Harrow Road,
LONDON, W.10.



Susan

kills all little
loathsome pests
in the house & garden
and all big business
worries in the Chemists'
Insect-killing trade

You can get 14/2 profit on every £1 invested in

HAWLEY'S I.K.

71% on your outlay!



Made in three sizes, to retail at 4d., 8d. and 1/3.

Every help is given to the retailer stocking I.K. Your customers are being interested and convinced by an efficient national publicity campaign which tells them WHY Hawley's should always be kept handy, and illustrates the repulsiveness of these disease-carrying pests, and appeals to the cleanliness of the British housewife.

Specimen Order with Bonus for Window Display.

		Cost		Selling Price
6 dozen 4d. at 2/8	... ...	£0 16 0	...	£1 4 0
½ ,, Free	... ...	- - -	...	0 2 0
5 ,, 8d. at 5/4	... ...	1 6 8	...	2 0 0
5/12 ,, Free	... ...	- - -	...	0 3 4
1 ,, 1/3 at 10/-	... ...	0 10 0	...	0 15 0
1/12 ,, Free	... ...	- - -	...	0 1 3
		£2 12 8	...	£4 5 7

PROFIT - 62·2% on cost.

Double the above order, and give a window display, and we allow 5% discount. The result then is as follows:—

					Selling Price
Cost	...	...	...	£5 5 4	... - - -
Less 5%	...	...	...	0 5 3	... - - -
				£5 0 1	... £8 11 2

PROFIT - 71·1% on cost.

All retailers who appreciate the value of the "Final Reminder" will be supplied with *free* reproductions of these advertisements for window display.

The quality and efficiency of Hawley's I.K. Insect Killer is guaranteed by—

EVANS SONS LESCHER & WEBB LTD.

LIVERPOOL. NEW YORK. LONDON.

1920 Fly Campaign

Are you getting your share of the business this is creating ?

Every mail brings the makers orders from butchers, fishmongers, restaurants, etc., which should be going through you.

Thousands of such users are now confirmed FLY=QUIT enthusiasts, and there is a new big field open in the home and hospitals, too.

FLY=QUIT

FLY=QUIT SPRAY HAS STOOD THE TEST OF EXPERIENCE

It is the only clean and effective way of clearing and killing flies and similar winged pests, and it costs under a shilling a week to use.

It is a truly pharmaceutical preparation in concentrated form which makes a fragrant emulsion of remarkable penetrating power when diluted with 15 or 20 parts of water, and which KILLS on wetting and CLEARS by its aroma as guaranteed by the makers.

It is only sold through the drug trade.

FLY=QUIT publicity (which includes local dailies as well as national weeklies) will bring the demand. Link up with it by displaying the line : attractive advertisements on request.

SPECIAL OFFER. *For **30/-** the makers will send six **3/9** boxes each containing 3 phials FLY-QUIT Spray, four **5/6** complete home outfits, with rubber sprayer and solution, together with a **6/6** magnum FREE, subject to window display of advertising material.*

VOUCHER. Every package of FLY-QUIT SPRAY contains a voucher enabling buyers to obtain a sprayer at cost price.

Wholesale Stockers : May, Roberts : Sutton's : Sangers' : Butler & Crispe. Manchester : Woolley's. Derby : Daniel's. Glasgow Depot, 3 Cadogan Street.

Sole Makers : LAWSON & CO (Bristol) LTD

ST. PHILIP'S, BRISTOL

Record Sales Again!

WE are glad to announce that **Sanatogen** sales remain higher than they have previously been at this time of year—a result which we attribute chiefly to increased advertising.

Formamint sales would also be a record but for the abnormal figure reached during the last influenza outbreak.

For **Genasprin** the demand continues to outstrip the supply; but our new plant should be ready by the end of this month, when we hope to rapidly overcome all arrears.

We think that the trade will be interested to hear that new plant for Formamint and Cystopurin is also in course of construction, thus providing for the increased sales which we confidently expect to achieve next Autumn and Winter.

GENATOSAN, LIMITED

(*British Purchasers of The Sanatogen Co.*)

12 CHENIES STREET, LONDON, W.C.1.

(Chairman: THE VISCOUNTESS RHONDDA).



TRADE MARK 'SKETOFAX' BRAND

ANTISEPTIC CREAM

Gives prompt relief from the effects of stings and bites of

MOSQUITOES, GNATS, MIDGES, ETC.

and also

Provides protection against the attack of such troublesome insects.

'SKETOFAX' will be found acceptable to those who seek recreation on playing fields, rivers or allotments, etc.

'SKETOFAX' is invaluable to those who visit mosquito-infested areas.

Pharmacists will find a ready sale for this valuable culicifuge



Actual size of tube

Each half dozen tubes supplied on Display Card

Trade List Price, 12/6 per dozen tubes, subject

BURROUGHS WELLCOME & CO., LONDON

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COX'S for PILLS.
COX'S for COMPRESSED TABLETS.

Arthur H. Cox & Co. Ltd. Manufacturing Chemists Est. 1839 Brighton

The *Lancet* describes it as "Mr. Benger's admirable preparation."

FOOD FOR INFANTS

BENGER'S

GOLD MEDAL AWARDED HEALTH EXHIBITION, LONDON.

Wholesale of all Wholesale Houses and Shippers or from the Manufacturers

BENGER'S FOOD LTD., Otter Works, MANCHESTER, Eng.

Branch Offices at: 117, Pitt St., Sydney, Australia; 90, Beekman St., New York, U.S.A. Canadian Agents: The National Drug and Chemical Co., Ltd., Montreal and Branches.

SHOWCARDS AND HANDBILLS ON APPLICATION. 46

The *British Medical Journal* says: "Benger's Food has by its excellence established a reputation of its own."

INVALIDS AND THE AGED.

5/3 DOZ.

The public will never pass this Show in your window, nor will they fail to appreciate the convincing straightforward message that eventually brings them up to the counter.



You will never allow such a wonderful sales-maker to go past you, yet with the few now left they may be gone.

A 6 doz. order on our generous terms—all that is needful to secure the Mons Man.

9D. P.A.T.A.

ZEPTO PENCILS.

The new Dental Plate Fixative guaranteed not to contain gum tragacanth. Holds plate firmly under all conditions. A long way ahead of anything yet used — most economical and pleasant to apply. A

COREGA

buyer is always a willing and continuous customer.

Small	Med.	Large	
1/9 Each	3/- Each	5/- Each	14/- 24/- 40/- doz. RESPECTIVELY.

Those who took our advice last time to get in a supply of the World's best Peroxide Cream did well as stocks are decreasing more rapidly than we expected—but still there is quite a lot ready for those who had not the time to drop the postcard—so come along!

NYAL'S

in the opaque glass jar with the pretty carton and nice showcard.

10/6 Per Doz. Each Jar **1/6**

T. CHRISTY & CO.,
4/12 OLD SWAN LANE,
LONDON, E.C. 4

The Chemist & Druggist



CONFERENCE NUMBER
JULY 24, 1920

Published at the Head Office:
42 CANNON STREET - - LONDON, E.C. 4
Branch Offices - Melbourne and Sydney, Australia.

Subscription: **20s.** per annum to any part of the world.
Single copies, **9d.**



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Coming Event.

Wednesday, July 28.

Birmingham Pharmaceutical Association, Chamber of Commerce (Room 8), New Street, at 8.30 P.M. Meeting of employers' Section to consider the stabilisation of the wages of pharmacists' assistants and apprentices.

Will.

MR. GEORGE PAXTON, 40 Primrose Hill Road, London, N.W., manufacturing optician, of Curry & Paxton, 195 Great Portland Street, W., and a director of Parke's Drug Stores, Ltd., who died on April 9, left estate of the gross value of 133,450*l.* 12*s.*, with net personalty 124,366*l.* 8*s.* 9*d.* The testator left the following among other bequests to hospitals, provided that the business relations with Curry & Paxton subsisting at the date of his will still exists: 250*l.* to the Royal Eye Hospital, St. George's Circus, S.E.; 200*l.* to the Central London Ophthalmic Hospital; 200*l.* to the Western Ophthalmic Hospital, London; 200*l.* to the Bristol Eye Hospital; 150*l.* to the Bristol Eye Dispensary; 100*l.* to King's College Hospital; 100*l.* to St. Thomas's Hospital; 100*l.* to Middlesex Hospital; 100*l.* to University College Hospital; 100*l.* to the New Hospital for Women, London; and to each employé of Curry & Paxton in the service of the firm at his decease and not under notice, either given or received, 50*l.* if of twenty years' service or over, 30*l.* if of between fifteen and twenty years' service, 20*l.* if of between ten and fifteen years' service, 10*l.* if of from five to ten years' service, and 5*l.* if of less than five years' service. He left his interest in Curry & Paxton equally between his sons James and George, nominating them as partners or directors to succeed him.

English and Welsh News.

The Editor would be obliged if subscribers would send him marked copies of newspapers containing items of interest for insertion in this or other news sections of the "C. & D."

Society of Chemical Industry.

The annual dinner in connection with the Society of Chemical Industry (*C. & D.*, July 17, p. 50) was held on July 14 in the King's Hall of Armstrong College, Newcastle-on-Tyne. Professor Henry Louis, M.A., D.Sc., A.R.S.M., etc., presided over a representative company. The toast of "The Society of Chemical Industry" was proposed by Mr. F. Priestman, J.P., D.L., and responded to by the chairman; "Armstrong College" was given by Dr. E. F. Armstrong, F.R.S., and responded to by Sir Theodore Morison, K.C.M.G., K.C.S.I., D.C.L.; "The City of Newcastle-upon-Tyne" was proposed by Col. W. C. Blackett, and responded to by the Lord Mayor (Mr. Walter Lee); "Kindred Societies" was given by Sir Wm. J. Pope, K.B.E., F.R.S., and acknowledged by M. Paul Kestner, President of the Société de Chimie Industrielle. In the course of his speech in reply to the toast of "The Society of Chemical Industry," Professor Louis said "the British public had found out that the chemist is not simply a man who stood in a shop with red and blue bottles and sold tooth-brushes and patent medicines"—a remark particularly out of place in Newcastle-upon-Tyne, in whose pharmacies have originated several chemical industries of first-rate importance in the commercial world. During the week an exhibition of chemical products and plant was held in Armstrong College. The exhibitors included Brotherton & Co., Ltd. (tar-products and dyes); Brady & Martin, Ltd. (analytical chemicals); J. Cameron Swan & Co., Ltd. (witherite); and the Thermal Syndicate, Ltd. (silica ware).

Poisonings.

The following case of fatal poisoning has been recorded since our last report:

An inquest was held at Burnley, on July 15, on the body of Mr. George Nuttall, a well-known resident, whose death was certified as due to carbolic-acid poisoning. Mr. Edward Linsley, an assistant with Boots, Ltd., at 89 Blackburn Road, Accrington, gave evidence to the effect that the deceased, when purchasing the acid, said that it was for disinfecting drains, and was cautioned by the manager of the shop to keep it in a safe place. An "unsound-mind" verdict was recorded.

Birmingham.

A health exhibition at the Bingley Hall was this week opened by the Lord Mayor in connection with the thirty-first Congress of the Royal Sanitary Institute.

Sir Richard Cooper, Bart., M.P. for Walsall, has purchased the Friary, Lichfield, which originally belonged to the Order of Franciscans, or Grey Friars, founded 1229.

Dr. Slater Price, of the Municipal Technical School, has been appointed research chemist to a photographic firm and commences his duties shortly. His salary here was recently increased to 700*l.* per annum.

Mr. A. W. Knapp, B.Sc., F.I.C., assistant analyst to Cadbury Bros., Ltd., Bournville, has written a standard work on "Cocoa." He was at one time in the city analysts' laboratory, afterwards with Lever Bros., Ltd.

The Lord Mayor (Mr. W. A. Cadbury, J.P.) has subscribed 2,000*l.*, Mr. Barrow Cadbury 100*l.*, Mr. W. A. Albright, J.P., 50*l.*, and Alderman F. C. Clayton, J.P., 25*l.* to the Birmingham Citizens' Committee, which is appealing for 100,000*l.* for the University.

The employés of Philip Harris & Co., Ltd., Birmingham, on July 17 congratulated Mr. H. S. Shorthouse, the managing director, on completing a third of a century with the business, and presented him with an illuminated album, signed by all the employés, as a memento of the occasion. The album—the work of Mr. W. H. Dry—was illustrated to represent pharmacy, medicine, and science. Mr. Laurence Bull (of forty years' service) made the actual presentation. Mr. H. S. Shorthouse joined the business at the age of fourteen, when it was at 9 Bull Ring. He passed all his examinations with Mr. F. H. Alcock, who counts him as one of his earliest and most brilliant students.

Liverpool.

The Hanover Street showrooms were visited by many members of the Conference, and in these and the laboratories they found an interest which time signally failed to exhaust.

The Royal Institution was so prepared by the curator (Mrs. Ellick, librarian to the Liverpool Chemists' Association) as to offer the full measure of its accommodation to the Conference.

"Welcome to the British Pharmaceutical Conference" was the illuminated text which greeted members of the Conference in the window of the pharmacy adjoining the headquarters hotel.

Mr. George Whitfield (Scarborough) was the first member of the Conference to reach Liverpool on July 17. He was closely followed by Mr. R. Feaver Clarke, J.P., of New Milton, Hants, formerly of Gravesend and Bournemouth.

In conversation with one of his guests at the Town Hall on Monday evening the Lord Mayor made the interesting remark that the late King Edward considered Liverpool Town Hall to be the finest in the kingdom, and, with one possible exception, in Europe.

The Conference assembled on Monday in the most brilliant weather locally of the month. All members were impressed by the cordial welcome by the Lord Mayor, the Lady Mayoress, and the Archdeacon of Liverpool (who represented the Bishop of Liverpool, absent at the Lambeth Conference).

Sheffield.

Mr. J. Evans, Ph.C., F.I.C., city analyst for York and Sheffield, etc., was one of the chief witnesses in the Yorkshire strychnine case.

A meeting is to be called of all retailers in pharmacy, along with the members of the local society, to discuss the new scheme for the standardising of salaries (*C. & D.*, July 17, p. 49).

Mr. L. Leadbeater is leaving Sheffield, having secured an appointment in the North. Mr. Piper, chemist and druggist, is taking over the management of Mr. F. Medley's Firvale branch.

General satisfaction will be given by the appointment of Mr. H. B. Hammond as secretary of the local society. As one of the younger members, he has already several years of useful work to his credit.

Mr. Thomas Anthony, Ph.C., Pentewan, Cornwall, has taken over the management of Mr. Paddon's Athercliffe Common branch. Mr. Anthony was a student with the late Mr. J. C. Umney at "the Square."

A pink form is to be issued for pensions prescriptions, which are to be grouped in bundles for each clinic, irrespective of doctor's name, to which must be attached an invoice with chemist's name and address, the name of clinic and number of prescriptions enclosed (an ordinary business invoice is sufficient), and forwarded monthly, to 25 Cedars Road, London, S.W. 4.

Miscellaneous.

Fires.—A slight outbreak occurred recently at the shop of Mr. W. H. Wandless, chemist and druggist, Duke Street, Whitehaven; it was extinguished before serious loss was incurred.—Considerable damage was done by an explosion, resulting in a fire, at the works of Harding, McMyn & Co., manufacturing chemists, Baxenden, on July 14.—A building occupied for the storage of naphtha and other inflammable material by the British Saccharin Manufacturing Co., Ltd., at Baxenden, was gutted by fire on July 15; the damage is estimated at 8,000*l.*

In the Courts.—At York Assizes, on July 15, Thomas Liddle, farmer, was sentenced to ten years' penal servitude for administering poisoned chocolate with intent to endanger life (*C. & D.*, June 26, p. 131).—At Thames Police Court, London, on July 16, K. Okawa, a Japanese subject, was sentenced to four months' hard labour for being in unauthorised possession of cocaine (*C. & D.*, July 10, p. 51).—At the Thames Police Court, London, on July 16, a Japanese subject named Jenji Okawa was sent to prison for four months for being in possession of cocaine, he not being an authorised person within the meaning of the Cocaine and Opium Order. Prisoner was found by a detective to be offering cocaine for sale in West India Dock Road, and was stated to be the man who supplied cocaine to seamen who were fined recently at the same court (*C. & D.*, July 10, p. 51).

Inquests.—At Guildford, on July 15, the inquest on the body of Mr. Edward H. G. J. Orange, chemist and druggist, Aldershot, was concluded. The evidence given on July 10 (*C. & D.*, July 17, p. 42) as to the speed of the Army ambulance van which struck him was fully corroborated, and the jury returned a verdict of "Manslaughter" against Cecil Hooper, the driver, who was accordingly committed for trial.—A Manchester boy named Thomas Donohoe picked up a piece of phosphorus on a recreation ground, and placed it in his pocket. The phosphorus burst into flame, and the boy was so severely burned that he died at the hospital. The source of the phosphorus is not known. The jury returned a verdict of "Accidental death."

Forged Prescriptions.—Before the Common Serjeant (Mr. H. F. Dickens, K.C.), at the Central Criminal Court, on July 20, Ellen Dora Battiscombe was brought up in custody, and pleaded guilty to charges of forging and uttering medical prescriptions for the supply of nepenthe (*C. & D.*, June 26, p. 132). Mr. Travers Humphreys, for the Director of Public Prosecutions, stated that the defendant was well connected and was a member of a good family, but had given way to drugs. She was a morpho-maniac, and when she failed to get hold of opium or morphia in some form or another it occurred to her to forge medical prescriptions and send them to chemists in different parts of England and so obtain a drug which no doubt had become indispensable to her. She accompanied the prescriptions with letters to retail chemists asking them to send the drug by post. She had sufficient sense to write the prescriptions in a very different handwriting from her own letters, and she made use of the names of two medical men who had attended her some years ago. When she wrote to the retail chemists she omitted in every case to enclose the amount necessary for the drug. The reason possibly was because she was hard up and had not got the necessary money. She obtained some drugs, and, as a result, the chemists communicated with the trade papers to the effect that there was a woman sending out prescriptions and obtaining nepenthe without paying for it. The result was that the accused was arrested at Teignmouth. She then admitted that she obtained the names of retail chemists from a reference book in a free library. Mr. Walter Frampton, for the defence, said that the arrangements had been made for the accused to go into a home for two years. The Common Serjeant said he concurred in the course proposed, and would bind the defendant over in the sum of 20*l.* on condition that she went to the home. On entering into her own recognisance the defendant was discharged.

Irish News.

The Pharmaceutical Society of Ireland.

The following are the results of the recent examinations:

Registered Druggist Examination.—The following (arranged in alphabetical order) passed: Michael Bourke, Neanagh; Thomas McDowell, Belfast; Frederick Alexander Reilly, Keady; Samuel Joseph Stevenson, Armagh. Two candidates were rejected.

Pharmaceutical Licence Examination.—The following passed with honours (all names arranged in order of merit): Thomas Joseph Burke, Buttevant; Robert Kerr, Lurgan; Robert Weir, Belfast; John Francis O'Neill, Mitchelstown. The following also passed: Edmond Hassett, Wexford; Thomas John McGuinness, Monaghan; Edmond Theodore James Gourley, Cookstown; James Francis Hogan, Golden; Robert St. Clair Adamson, Ballina; (John Joseph Doohan, Belfast=James Nolan, Carrickmacross); Thomas Joseph McDermott, Boyle; Thomas Farrar, Milford, co. Carlow; (John Bourke, Dublin=Thomas McEver, Kinsale); Leopold Frederick Cockrill, New Ross; James Dawson McClelland, Belfast; John Wilson Miller MacConnell, Enniskean, co. Cork; Francis Joseph MacMahon, Cootehill; Thomas Burke, Dublin; John Thomas Manning, Croom. Twenty-three candidates were rejected.

Pharmaceutical Assistant Examination.—The following passed (names arranged in order of merit): Hendry Scott Murray, Belfast; Reginald Albert Edward Simmons, Londonderry; David Moffatt, Canningstown, co. Cavan; Samuel Gamble, Shercock. Two candidates were rejected.

Brevities.

Amongst the premises damaged in the riot in Tuam, co. Galway, on July 20, were those of Mr. Frederick Stafford, chemist, but fortunately the fire was extinguished at an early stage.

In reference to the paragraph in this column in our issue of July 10, the clerk of the Birr Union informs us that it is not true that he wrote six letters to the drug contractor complaining of shortage of medicines. The clerk's letter is printed on p. 110.

On July 13 eight policemen raided Mr. Barry's Medical Hall, Main Street, Boyle. They closed the doors of the premises, and three policemen, armed with revolvers, remained in the shop guarding two apprentices, while the others ransacked their belongings in the residential part of the house. The police did not interfere with Mr. Barry's manager, Mr. Philip Fahey, who was also on the premises, which he is managing during Mr. Barry's holiday on the Continent. The apprentices had two note-books taken away, which were afterwards returned.

Belfast.

In the Irish Chancery Division, recently, Cantrell & Cochrane, Ltd., Belfast, aërated-water manufacturers, obtained an injunction by consent against Bernard Gillard, 2 Mountcollyer Street, restraining the defendant from unlawfully using the plaintiffs' trade-mark and from passing off goods not made, selected, or bottled by the plaintiffs. Defendants paid the costs.

At a recent meeting of the Senate of Queen's University it was reported that the Buildings Committee had obtained plans and instructed the University architect to obtain an estimate for the additional accommodation required for the department of physical chemistry. This additional building follows the gift of Mr. F. A. Heron, J.P., Maryfield, Holywood, of a sum of 6,000*l.* to equip the new department.

Mr. Alexander Deans, managing director of Deans, Logan & Co., Ltd., Commercial Court, Belfast, cordial manufacturers, was entertained to dinner on July 16 by a few friends. The drug-trade was represented at the function. Mr. and Mrs. Deans intend leaving shortly for an extensive tour in South Africa, principally with a view to visiting their daughter and her family, who reside in Port Elizabeth. The chair was occupied by Mr. D. Motherwell.

Scottish News.

Petrie Trust Bursary Competition.

The competition for this scholarship will be held in Aberdeen early in August. The bursary, which amounts to some 20*l.*, is open to all student-associates of the Pharmaceutical Society who have served an apprenticeship of not less than three years with a pharmacist in the city or county of Aberdeen, and who have not attended any pharmacy classes. The subjects set are such as would be met with in the ordinary retail work of a pharmacy, viz., dispensing, stockkeeping, and business methods. Particulars may be had on application to Mr. H. M. Dugan, secretary, Aberdeen Pharmaceutical Association, 275 Holborn Street, Aberdeen.

Dangerous Drugs Bill.

The Edinburgh Anti-Opium Committee has sent the following resolution to the Prime Minister:

The Committee thank the Government for the prompt introduction of the Dangerous Drugs Bill, and trust that facilities will be given for its speedily becoming law; they, however, desiderate in it a more definite restriction of both "raw opium" and morphia and cocaine to medical requirements, which they believe to be the intention of the Hague Articles, when taken as a whole; they also trust that the provisions of the Bill will be extended to India and other Eastern Dependencies, according to the terms of the Declaration of the British signatories at The Hague, which says, "The Articles of the present Convention shall apply to British India, Ceylon, the Straits Settlements, Hong Kong, and Wei-hai-Wei, in every respect in the same way as they shall apply to the United Kingdom and Ireland."

Edinburgh.

Mr. Davidson, Tollcross, is having a "sale" at his shops.

Mr. Thomas Stephenson, Ph.C., who has been joint secretary of the Edinburgh Rotary Club for some time, intimated at the recent annual meeting that he did not seek re-election.

Mr. Duncan, chemist and druggist, Easter Road, Leith, has had a window-show of a working model of his recently patented machine for sowing turnip-seed. Alongside is a box containing growing seedlings. The unique display has attracted considerable attention.

The reopening of a duly forgiven local hostelry is not without interest to a "big" traveller from a distant town and two well-known Scottish pharmacists. The latter, during that distressful period when "no-treating" was helping to win (!) the war, met the commercial one evening in ill-lighted Princes Street. The traveller suggested a flying visit to the —— Bar. "What shall it be?" asked the sociable commercial. But after a few seconds' discussion each paid for his own lemonade! A moment later the gentlemen at the next table were giving their names and addresses to a couple of police officers in mufti, while the pharmaceutical law-abiders whispered congratulations to one another.

Fife.

Mr. D. A. B. Leadbetter, chemist and druggist, Lochgelly, has been elected director, and Mr. R. S. Ramsay, chemist and druggist, Cardenden, chairman, of the respective local gas companies.

John Mackay & Co., Ltd., manufacturing chemists, Edinburgh and Glasgow, have purchased the old spinning-mill at Cupar, recently occupied by the Government. It is understood that the premises are to be used chiefly in connection with Messrs. Mackay's extensive trade in coffee.

At the annual meeting of White's Baptist Church, Mr. Charles Stewart, chemist and druggist, High Street, Kirkcaldy, was appointed treasurer in place of Judge Peebles, chemist and druggist, whose resignation was due to illness. Judge Peebles had been treasurer for twenty-eight years.

Legal Reports.

The Test Case.—The case of Jenkin *v.* The Pharmaceutical Society of Great Britain, which was the next to come into his Lordship's list for hearing, was mentioned to Mr. Justice Eve in the Chancery Division on July 22, when an application was made by Sir A. Richardson, M.P., on behalf of the plaintiff that the action should not come on for trial before the following Wednesday. Counsel said that Mr. J. B. Matthews, K.C., was leading him for the plaintiff, and Mr. MacMorran, K.C., would be for the defendants. He had the consent of his opponents to the postponement. His Lordship: How long will the case last? Counsel said he thought it would take three hours. It turned upon the construction of the charter of the defendants. His Lordship said the action would come into the list the following Wednesday (July 28), subject to anything part heard.

Sale of Zotal in Spain.—In the King's Bench, on July 15, Mr. G. R. Moxon continued his evidence in the action brought by Señor José Maria Gutiersez Espinar against Burgoyne, Burbidges & Co., manufacturing chemists, in which damages were claimed for alleged breach of agreement and libel in connection with the sale of the disinfectant Zotal in Spain (*C. & D.*, July 17, p. 47). Mr. Moxon said that when the plaintiff failed his firm naturally wanted to place the contract for the sale of Zotal with somebody else, and then they found that the trade-mark was not theirs, and as Tehera claimed to sell Zotal they placed the contract with him. The production contained soluble solution of creosote and resin, which made an emulsion. In 1909 they supplied Tehera with 5,000 gallons, in the following year with 6,960, and in 1911 with 8,200. Then in 1912 it dropped to 1,300 gallons, and after that, in 1913, to 200. His firm only manufactured Zotal as a side-line and would not have minded had it died a natural death. They learned that in 1912 Mr. Tehera was purchasing elsewhere 65,000 gallons of soluble creosote and selling it under the trade-mark of Zotal. Mr. Schiller: And, in fact, you were being defrauded?—Yes. Witness agreed that the plaintiff told him of that fact, so the firm gave the contract to Espinar, because they did not know to whom else to give it. Directly afterwards he came to the conclusion that Espinar had not told them the actual facts. Mr. Meneces, foreign correspondence clerk to the defendants, said he heard the plaintiff say that the business of Tehera could easily be dispossessed of the trade-mark "Zotal." On July 16 the Lord Chief Justice, by agreement, delivered his decision on that part of the issue that was governed by Spanish law—viz., whether the registering of the trade-mark "Zotal" by the plaintiff as his property was legal. The legal evidence he had heard, he said, was to the effect that the rights of a *bona-fide* purchaser for value of a trade-mark were protected by the Spanish law, notwithstanding that the seller obtained the trade-mark by fraud from the original owner. So that, if Tehera bought the trade-mark for value from Espinar, he was protected. But it was also said that if Tehera had carried on nefarious practices by selling a disinfectant other than "Zotal" under the trade-mark "Zotal," it was within the province of the defendants to proceed against him in Spain, when they could, if they proved their case, have got an injunction against Tehera and obtained the cancellation of their trade-mark. It would have been possible for the plaintiff to have taken proceedings to that end, but defendants had not placed him in that position, and the refusal by them to take proceedings in Spain created a breach of the contract with Espinar. In consequence the only question left for the jury to consider was the amount of damages Espinar was entitled to for a breach of contract, and whether there had been a libel. The jury found for the plaintiff 5,000*l.* damages for breach of contract and 1,000*l.* damages for libel, and judgment was entered for plaintiff for these sums, with costs.

Marriages.

Corbin—White.—At the Parish Church, Petersfield, on July 14, by the Vicar, Norman, son of Mr. G. H. Corbin, Hermosa, Elm Grove, Southsea, to Florence May, elder daughter of Mr. T. A. White, pharmaceutical chemist, Homefield, Petersfield, recently retired from the Elm Grove Pharmacy, Southsea.

Paterson—Murison.—At the Highgate Presbyterian Church, on July 17, by the Rev. Alexander Ramsay, D.D., Robert Crawford Paterson, son of Mr. T. Paterson, Glasgow and Largs, to Marjorie Isabel, youngest daughter of Mr. John Murison (managing director, Parke's Drug Stores, Ltd.).

Deaths.

Buckley.—At 2 Frances Street, Woolwich, on July 15, Howard, the only son of Mr. John D. Buckley, chemist and druggist, aged twenty-one.

Eedes.—Recently, Mr. George Albert Eedes, chemist and druggist, late of Goudhurst, aged eighty. Mr. Eedes was in business at Goudhurst for many years, and was well known locally as people's warden of the parish church and as secretary of the Goudhurst Choral Society.

Knight.—At 452 Edgware Road, London, W., on July 17, Mr. George James Knight, chemist and druggist, aged sixty-nine. Mr. Knight had been laid aside from business for three to four months as the result of a chill followed by phlebitis, but was recovering and hoped to go away for a change. Last Saturday week, however, he had a relapse, and he passed peacefully away. Mr. Knight was born in Norwell, Nottinghamshire, and was educated at the Collegiate School, Southwell, and at the Milk Street School, Sheffield. He came to London at the age of nineteen, qualifying in 1875, and three years later he became the proprietor of Windle & Co.'s pharmacy, so that he had been at the above address for forty-two years. By his death pharmacy in West London loses one of its most forceful and interesting personalities, and the Pharmaceutical Society one of its most fearless critics. He lost no opportunity of exercising his privileges in this direction at the annual meetings of the Society, whose "wait and see" policy he frequently condemned in scathing terms, much to the delight of the audience. Mr. Knight was a director of the Chemists' Defence Association, Ltd., and he took a considerable interest in public affairs. He was a member of the Marylebone Vestry, a Councillor for thirty-five years, and a Churchwarden of Christ Church, Marylebone. He was also a member of the Worshipful Company of Wheelwrights and a Freeman of the City of London. He had a keen sense of his public duties, as on several occasions he made spirited protests in the Marylebone Police Court against the neglectful conduct of the Paddington Borough Council in carrying out its tasks. Mr. Knight is survived by three daughters and a son. The funeral took place at Kensal Green on Wednesday.



Mr. G. J. Knight

Laing.—At Shirleyhyrst, Croydon, suddenly, from heart-failure, on July 17, Mr. Robert Alexander Laing (James Laing Son & Co.), gum merchants, 14 Mincing Lane, London, E.C.

Piquet.—On July 18, Mr. Frederic George Piquet, chemist and druggist, 11 Halkett Place, St. Helier, Jersey. Mr. Piquet, who passed the Minor examination in 1873, for many years carried on the business at Halkett's Place, and the corner is quite a prominent position in St. Helier.

BRITISH PHARMACEUTICAL CONFERENCE

The President's Address

Progress in Science and Pharmacy.

By CHARLES ALEXANDER HILL, B.Sc., F.I.C.

TWENTY-FOUR years have passed since the British Pharmaceutical Conference met in this great city of Liverpool. On that occasion the late William Martindale, in his presidential address, dealt with the use in medicine of "active principles" in substitution of the natural—*i.e.*, naturally occurring—drugs. At the same time he described the introduction of synthetic substances into medicine as a novelty. To-day it is fitting to reflect upon the changes in pharmacy wrought by progress in science—progress in chemistry and biochemistry, in physics, in physiology, and in the science and practice of medicine; next, to examine the extent to which active principles and synthetics have replaced natural drugs; then, tentatively, to survey the lines upon which future development may be expected.



MR. CHARLES ALEXANDER HILL,

President of the British Pharmaceutical Conference which met at Liverpool this week. He is managing director of The British Drug Houses, Ltd., wholesale druggists and manufacturing chemists. He was President of the Conference in 1917 and 1918.

SYNTHETIC DRUGS.

Of the changes that have occurred, the increased use of synthetic drugs is the outstanding, though by no means the only feature. It is noteworthy that important discoveries of new vegetable drugs are practically unknown. The animal kingdom, on the other hand, has furnished us with drugs of the first importance; of these the products of the pituitary body, the thyroid gland, and the suprarenal gland afford notable examples. The importance of these discoveries is in no wise diminished if the active principles have been synthesised and can be produced artificially.

The use of synthetic remedies in medicine is sometimes said to date from the introduction of antipyrin in 1884, but chloroform and chloral hydrate had long been known and used, and synthetic salicylic acid was freely used in 1877. Hypnone (acetophenone) followed in 1885, antifebrin (acetanilide) in 1886, and these were succeeded by phenacetin, sulphonal, and trional, and since then there has been a steady flow of new synthetic drugs. To-day the world's annual consumption of phenazone, or antipyrin, may be roughly estimated at 100 tons, of phenacetin 250 tons, and of medicinal salicylates (sodium salicylate, methyl salicylate, aspirin, and salol) at no less than 2,500 tons, and these are a few only out of the multitude of pure chemical substances used in medicine.

Notwithstanding the phenomenal extent to which synthetic drugs have come into use, and despite the increased employment of active principles, according as our knowledge of these progresses, the use of the drugs themselves, in the form of galenical preparations, whether "standardised" or not, continues to a remarkable and perhaps significant extent. Furthermore, as we shall see, signs are not wanting of a growing recognition of the truth that many a drug and many a food may contain valuable properties not readily determined by chemical methods. It may be only slowly that the full value of a drug discovered empirically can be stated in scientific terms. Parodoxical as it may seem, the tendency to-day, with advancing scientific knowledge, is to recognise the failure of the active principle to replace the parent drug.

When it happens, the replacement of a natural drug by a synthetic substance may be conceived as proceeding ideally in four stages. First, the drug is examined chemically, and from it is isolated a pure substance, frequently an alkaloid or glucoside, which, upon being subjected to physiological tests, is found to have an effect similar to that of the parent drug; such a substance is termed the "active principle" of the drug. The second stage is to determine the chemical constitution of the isolated active principle; this, in general, is a matter of extreme difficulty, taxing the resources of our most brilliant organic chemists, which, indeed, is equally true of the third stage, which consists in effecting the synthesis of the substance. Once the synthesis has been successfully accomplished we arrive at the fourth, and last, stage, which is the manufacture of the substance upon a commercial scale. The case of suprarenal gland and adrenalin affords an illustration.

It does not follow as a matter of course that if the synthesis of a substance be accomplished, the artificial or synthetic article will replace the naturally occurring one. Supposing quinine were to be synthesised, it is by no means to be assumed that it would be cheaper to produce it on a large scale in the laboratory than to get Nature to conduct the synthesis, and then to extract the alkaloid from cinchona bark and subsequently purify it. It has been amply illustrated in the case of cinchona bark that it pays to subsidise Nature and to encourage her to increase her yield. Intensive culture may be a better business proposition than laboratory manufacture.

The Chemical Point of View.

By far the larger number of chemical substances used in medicine are not the active principles of natural drugs. It would lead me beyond the confines of my address to attempt even a cursory survey of what has been accomplished in the limitless field of synthetic drugs, to the enormous consumption of which I have already made reference, or to make more than the barest mention of the fact that synthetic organic substances are employed as antiseptics, anæsthetics, narcotics, hypnotics, antipyretics, and in the treatment of diseases, notably those of parasitic origin. Nor need I remind you of the many attempts made by chemico-physiologists to correlate chemical constitution and physiological action. Much chemical and physiologial work has been done in this fascinating field of research, and certain generalisations have resulted by deductive reasoning from very numerous data, yet it has to be admitted that really very little is known of this borderland subject. The physical condition of the substance, its solubility, especially its relative solubilities in different solvents ("partition coefficient"), its adsorptive power, osmotic properties, and other physical properties have as much to do with its physiological action as has its constitutional formula.

It may indeed be that the purely chemical action of a drug is destined to play a subordinate *rôle* in therapy and that, in the past, the physical action has not been sufficiently considered.

Chemotherapy shows us clearly that the physiological action of a substance is not due to one constituent only of that compound, but that it depends largely upon the molecular orientation of the compound and the ratio of adsorption which exists between it and the protein colloidal particles through which this or that constituent is going to act. Consider arsenic, for example. In the treatment of disease, plain liquor arsenicalis is not so effective as colloidal arensic sulphide, nor is the latter so effective as arseno-phenyl-glycine, nor the last so effective as di-amino-arseno-benzene. They all contain arsenic, but the last, in virtue of its amino groups, is able to be absorbed in very large quantities by the protein colloidal particles; consequently, the greatest amount possible of the element gets taken up. So far as can be seen at present the amino groups are of great importance in a chemotherapeutic compound, especially if they can be placed in the ortho-position to the element one wishes to incorporate.

Of greater importance than the group is the molecular orientation : one needs only to mention the effect of introducing an acetyl group to illustrate this point. Compare di-ortho-amino-thiobenzene with its acetyl derivative; the former is practically a specific for metallic poisoning, while the latter is as inert as plain colloidal or sublimed sulphur. Even di-para-amino-thiobenzene cannot compare with the ortho body. The addition of an acetyl group to salicylic acid results in a new analgesic property, while at the same time the undesirable after-effects of salicylates are in some measure eliminated. A similar addition to phenetidin gives us phenacetin with its valuable antipyretic properties. On the other hand the addition of an acetyl group to para-hydroxy-phenyl-ethylamine (an active principle of ergot) results in loss of activity. The introduction of an acetyl group into the choline molecule converts this comparatively inert substance into a powerful heart poison. Highly interesting is the case of aconitine. This intensely poisonous alkaloid is the acetyl derivative of benzaconine, the latter substance being relatively non-toxic. Yet the introduction of further acetyl groups into the aconitine molecule does not increase but diminishes its toxicity.

It is a commonly expressed view that the growing use of synthetic drugs is to be regarded as a slow revolution in pharmacy, an observation often coupled with a reminder that the manufacture of organic synthetic substances has not been a British industry.

The Manufacturing Processes.

Considering synthetic drugs from the point of view of their manufacture, we find that in very many of them alcohol is necessary, either as a solvent or as a reacting constituent, *e.g.*, adalin, anæsthesin, phenazone, chloral, veronal, sulphonal, urethane, phenacetin, and many others. Individually each one may not be sufficiently important to warrant legislation nor change of departmental attitude or administration, but collectively these, and other pure chemicals not used in medicine, mean the organic fine-chemical industry. The use of duty-free alcohol without unduly harassing restrictions is essential for the establishment of this branch of manufacture, with which goes progress in the discovery and introduction of new substances into medicine : but it is a wider question still, for this class of manufacture is one branch of the finer-chemical industry which must be considered as a whole. The importance to the country of establishing upon a firm basis the fine-chemical industry, in which previous to August 1914 Germany stood supreme, has been argued so frequently and so convincingly during the past six years that further reference to it ought to be unnecessary, yet unhappily this is not the case. Now, before the industry is sufficiently strong to resist the onslaught, it is exposed to attack from abroad by the unrestricted importation of foreign fine chemicals. As if to make assurance doubly sure, this infant industry is in process of being strangled at birth by the excess profits duty. Starved of alcohol and stifled by the excess profits duty, what remains is being done to death by the Sankey judgment.

But this is neither the time nor the place to re-argue the national importance of the fine-chemical industry I wish merely to point out that advance in this branch of medicine is bound up indissolubly with the rest of fine-chemical manufacture. Moreover, it may be remarked that there is not such a strong inducement to produce new synthetic compounds as there would be if there were ready to hand adequate facilities for clinically testing such products and subsequently introducing them into medical practice. In this respect British firms are placed at a serious disadvantage as compared with their rivals in other countries.

Constituents of Natural Drugs.

We pass now to a survey of naturally occurring drugs and their chemical or active constituents. Needless to say, anything like a complete review is out of the question, and I can discuss the subject only by means of examples. Some drugs are used only for the aromatic principles or essential oils. In the cases of aniseed, caraway, cinnamon, cassia, and cloves, the drug continues to enjoy ample vogue, but as regards eucalyptus and mentha piperita, the essential oil entirely replaces the parent drug. In some cases progress has gone a step further, and the most important constituent of the essential oil is used in place of the oil itself : thus, carvone replaces oil of caraway in liqueurs, while menthol enjoys a wide vogue, though its purpose differs from that of the oil of peppermint from which it is obtained. Very generally, however, the natural essential oils continue to enjoy a reputation which is not attained by any constituent nor any substitute, and deservedly so.

Drugs which are in common use, or have been employed for some specific purpose as having real activity, may for our purposes to-day be conveniently divided into three classes. First, there are drugs the pharmacy of which may be said to have been virtually worked out. Examples of this class are :—Aconite, belladonna, calabar beans, cantharides, cinchona, coca, hyoscyamus, ipecacuanha, jaborandi, nux vomica, opium, pomegranate bark, and suprarenal gland. Secondly, there are drugs from which some active principle has been isolated, but which have been only partially or incompletely worked out. Examples of this class are digitalis, ergot, rhubarb, strophanthus, and valerian; pituitary body and thyroid gland. In the third class are placed those drugs still in general use from which no undoubted active principle can as yet be said to have been isolated—such are calumba, cannabis indica, cascara sagrada, gentian, hamamelis, senega, senna, and squill.

In the case of five drugs the 1914 edition of the British Pharmacopœia has taken the step of omitting them from its pages and making their active principles official, these

are: Calabar beans, represented by physostigmine sulphate; cantharides by cantharidin; coca-leaves by cocaine hydrochloride; jaborandi leaves by pilocarpine nitrate; and pomegranate bark by pelletierine tannate.

The Next Stage.

The supersession of a natural drug by its active principle does not always stop at that point, but the change proceeds a step further, and the active principle itself is elaborated. This process we may regard as a combination between the replacement of a drug by its active principle and its supersession by a synthetic. We see this process illustrated in the following cases:

Coca	Cocaine	Eucaine Ecgonine derivatives
Opium	Morphine and Codeine	Acetylmorphine Ethylmorphine
Valerian	Valeric acid	Menthyl valerate (validol) Bornyl valerate (bornyval)
Salix Gaultheria	Salicin Methyl salicylate	Salicylates Aspirin Salol
Cinchona	Quinine	Quinine ethyl carbonate Di-quinine carbonate (aristochin)
Hydrastis	Hydrastine	Hydrastinine

Coming now to a consideration of the intensely interesting problem of endeavouring to ascertain how far active principles have supplanted natural drugs, I will bring to your mind what has been done in a few well-known cases.

Opium.

Have opium and its galenical preparations gone out of use by reason of the prescribing of morphine, codeine, and their derivatives? As every pharmacist knows, the answer is a strong negative, and it is notorious that morphine does not from any point of view completely replace opium.

Opium contains more than twenty different alkaloids, possessing varied physiological properties. Morphine has a well-known depressant action on the central nervous system, and codeine has a similar though milder action. Papaverine is a narcotic less powerful than morphine. Narcotine, which exerts little or no narcotic effect, produces a condition of excitement rather than depression. Laudanine and thebaine exert a strychnine-like action, while cryptopine and protopine act on the central nervous system somewhat like morphine. It has been shown that upon adding narcotine to morphine the mixture has a greater narcotic effect than when morphine alone is employed, although narcotine alone possesses little or no narcotic action. Papaverine alone does not affect the action of morphine, yet it considerably increases the activity of mixtures of morphine and narcotine.

In addition to the alkaloids, there are present in opium organic acids, such as meconic and lactic acid, sugars, gums, etc.; the presence of these substances in morphine preparations serves to delay and sustain their action. Since sustained action of this type is what is usually required in a narcotic drug, and, on the other hand, rapid absorption of the drug may prove dangerous, the reasons why galenical preparations of opium retain their popularity are clear.

Nux Vomica.

More striking is the continued use of preparations of nux vomica, for so far as is known these are used entirely for their strychnine content. When we administer liquor strychnin. hydrochlor. we administer strychnine in the form in which it can most readily and quickly act upon the system. When we administer extract of nux vomica, we administer strychnine accompanied by, possibly occluded by, other substances which may have quite an appreciable effect upon the rate at which the strychnine is absorbed.

The difference between the action of nux vomica and strychnine is to be mainly attributed to the effect of the extractive matter in retarding the rate of absorption and in retaining the alkaloid in solution even in the presence of alkaline media, which would precipitate pure strychnine. If this extractive matter possesses the importance that has been indicated, one can readily see that the preparations may act differently according to the menstruum employed in making them. Stronger or weaker alcohol or the presence of organic acids may considerably affect the nature of the extractive present, which in turn will affect the rate of absorption, and so forth.

There are only two alkaloids of any importance known to be present. Brucine, which has an action similar to that of strychnine, is very much weaker, its activity being but about one-thirtieth that of strychnine. Whether or not its presence assists the action of strychnine does not appear to have been determined. There is ground for belief that another alkaloid is present in small amount in nux vomica, and some research is needed with a view to isolating and determining the physiological properties of the alkaloid or alkaloids.

Belladonna and Hyoscyamus.

Preparations of belladonna and hyoscyamus continue in use to a notable extent. Although these two drugs owe their activity chiefly to the same alkaloid, *Hyoscyamine*, yet we know that their preparations are by no means interchangeable. Part of the difference of action may be accounted for by the fact that hyoscine is present in larger proportion in hyoscyamus than in belladonna, thus accounting for greater sedative action.

Hyoscyamine, when it is heated or if allowed to remain in an alkaline condition, is converted to atropine, and when this isomeric change takes place, the physiological activity becomes modified, for atropine acts only half as strongly as hyoscyamine on the peripheral nervous system, though it has an activity equal with that of hyoscyamine on the central nervous system. These facts indicate the care required in making the extracts and preparations of belladonna and hyoscyamus. The formation of atropine is minimised by making use of a vacuum concentrator in the course of manufacture; without this precaution there is indeed a great risk of decomposing the hyoscyamine altogether, forming tropine and atropic acid.

Digitalis.

Digitalis preparations have still to be administered because, in spite of a truly great amount of published work, no active principle has been isolated from this plant which even approximates to the drug itself. The activity of the freshly made infusion and tincture is due to the combined effects of digitalein, digitoxin, gitin, and other glucosides. The solubility of these substances when isolated is too small for satisfactory administration, and no combination of them has the valuable properties of a good tincture.

Ipecacuanha.

Let us now consider the case of ipecacuanha. This is one of the drugs I classified as having been worked out; yet, as is well known, "ipecac. sine emetin." was the drug employed in India for the treatment of dysentery. We now employ emetine bismuth iodide, a compound of emetine which is nearly insoluble and therefore may be presumed to give up its emetine very slowly to the human system. "Ipecac. sine emetin." consisted of powdered ipecacuanha root, from which nearly all, but not quite all, of the alkaloid had been removed, the small amount of emetine still remaining being that portion which it is most difficult to extract. In "ipecac. sine emetin.," therefore, we had a drug which contained a very small proportion of emetine in an insoluble form, and would therefore presumably yield up its emetine very slowly. The similarity between the old-fashioned "ipecac. sine emetin." and the latest development in the treatment of amœbic dysentery by emetine bismuth iodide need not be laboured.

Cinchona Bark.

Extremely interesting is the case of cinchona bark which has already been under our notice as a typical instance of the value of intensive cultivation. Down to quite recently one would have unhesitatingly included cinchona with the drugs which have been almost completely replaced by their active principle. Galenical

preparations of cinchona bark have largely gone out of use in this country, though still extensively employed in other parts of the world. Quinine, on the other hand, is almost a household remedy in the familiar form of sulphate, in which form as well as in the form of other salts it is very largely prescribed. It is the primary ingredient in countless mixtures, tonics, and pharmaceutical preparations, and has long been known as a specific for malaria. Recent work by Major Acton, to which much importance attaches, throws a new and interesting light upon this subject. His results indicate that while quinine is useful in the treatment of malignant tertian malaria, it is of small value in eradicating benign malaria, but that the total alkaloid of cinchona is effective for the latter purpose. Of the eight important alkaloids present in "cinchona febrifuge" (a preparation containing the total alkaloids of cinchona bark) the results so far indicate that quinidine is the most important for this purpose.

Advances in Bio-Chemistry.

Theoretically every ingredient of a drug or preparation must have some effect, though it may be so small as to be inappreciable by any known means; but some drugs and foods have constituents minute in quantity, and therefore long unknown, of the very highest degree of importance. Indeed, recent advances in bio-chemistry have proved the existence in drugs and foods of physiologically active substances, which give a rational explanation of facts based upon experience and established empirically.

Fresh in the memories of all of us is the discovery of the cause and cure of beri-beri, constituting one of the romances of medical science. Beri-beri is a disease of high mortality, which ravaged tropical countries and caused much misery. It had long been connected in the minds of the investigators with the rice which formed the staple food of the populations affected by it, but it has only recently been discovered that the disease is caused by the refinements of rice-milling, brought about by the introduction of machinery. It was observed by Eijkmann, the medical officer to a prison in Java, that the poultry of their establishment suffered from symptoms remarkably like those of beri-beri, which was common in his gaol, where the inmates were fed on rice diet. Investigations showed this observer that the fowls could be quickly cured by adding to their diet the pericarp and embryo of rice removed during the process of milling.

From this starting-point there was established by research a complete correlation between the occurrence of beri-beri and the consumption of steam-milled rice. In districts where rice is polished by hand, the disease does not frequently occur, because it rarely happens that the whole of the pericarp and embryo are removed by hand. Fowls fed on polished rice quickly suffered from polyneuritis, and birds which had arrived near to the point of death were quickly rescued, it was found, by an administration of a watery extract of rice polishings. Thus was beri-beri found to be caused by the absence from the diet of a substance soluble in water and present in rice-polishings. This water-soluble constituent belongs to a class of accessory food substances which have been somewhat unfortunately named "vitamines." Work on these vitamines can scarcely be said to have a chemical basis, since all attempts to isolate them have failed. At least three have been recognised: (1) water-soluble "B" factor, which prevents beri-beri, occurs in the seeds of plants and the eggs of animals, in yeast and liver and grain cereals.

Scorbutus, or scurvy, is a disease which in former times caused high mortality. Sailors particularly were subject to attack, this being due to the fact that they were not obtaining another water-soluble vitamine, (2) the anti-scorbutic factor. The disease yields readily to a diet of potatoes, cabbages, and most fresh fruits.

Thirdly, there is a fat-soluble vitamine; this is present in cream and butter and beef-fat, and affords us a rational explanation of our natural preference for real butter over vegetable margarine. Cod-liver oil, which may be regarded as intermediate between foods and drugs, has long enjoyed a deservedly great reputation as possessing qualities superior to those of other oils. These qualities are due to the fact that good cod-liver oil has a high vitamine content, and is, therefore, important in the prevention and cure of rickets. On the other hand, vegetable oils, such as linseed, olive, cotton-seed, coconut, and palm, contain only negligible amounts of this vitamine.

Bio-chemistry shows us the importance of other accessory substances besides vitamines. Enzyme action has been shown to be modified, or stimulated, by the presence of other substances, termed "co-enzymes." Parallel phenomena have been observed in the digestive processes of mammals in the remarkable activating nature of bodies termed "hormones."

It would be beyond the limits of my address to go further than these somewhat brief indications that naturally occurring drugs and foods contain substances that long remain unsuspected, and still longer unrevealed, but quite enough will have been said to show how unsafe it is to substitute one thing for another.

Research.

Our past-President, Mr. William Kirkby, in his admirable presidential address last year, dealt with the subject of research. Later, he prepared a "draft of a scheme for pharmaceutical research," which formed the basis of full and careful consideration of the subject by your executive, your research sub-committee, and others. Several highly interesting discussions took place, giving rise to a number of useful suggestions, among them, that referred to in the report of the executive that a conference be held consisting of representatives of the British Pharmaceutical Conference, the Pharmaceutical Society, the Drug Club, and the Association of British Chemical Manufacturers. I am bound, however, to observe that difficulties were especially prominent, and with great regret I have to report that so far nothing like a crystallised, concrete scheme has been formulated. This does not mean that I see any need to abandon hope. The Department of Scientific and Industrial Research is sympathetic, and genuinely anxious to assist. Such schemes have been successfully floated in more than a dozen instances, among them the cotton, linen, leather, and glass industries, and the confectionery trade; but we have to consider whether the drug-trade, as a trade, is a suitable subject for a research scheme on similar lines. The cotton industry deals with one commodity, cotton; the glass trade with glass, and so on; in the drug-trade we deal with hundreds of drugs, any one of which might be a suitable subject for profound and prolonged research. A plant-cultivation scheme alone, to be worked effectively, would be very expensive, even without any accompanying chemical research. A large sum of money might be spent upon any one drug, and the result, even if successful, might well be small in comparison with the outlay.

On the other hand, more ought to be done than is being done, and it should not be left entirely to private enterprise. Some co-ordination is required between physiologists and chemists, between medical men and pharmacists, and with firms having at their disposal laboratories and research chemists. Past efforts at collaboration between the British Pharmaceutical Conference and the British Medical Association have not been such as to inspire too much hope, but something ought to be done to bring pharmacists and medical men together to decide what problems require solution, what drugs are worthy of investigation, and so forth. One hesitates in these days to suggest the formation of any new committee, but the importance of the subject requires that some machinery should be set up for collaboration upon subjects of research between pharmaceutical and medical authorities. I venture the suggestion that the Ministry of Health, representative both of the Government and of medicine, together with the British Pharmaceutical Conference, representative of the whole body of pharmacists, should be able to provide machinery adequate for the purpose.

What is meant by "pharmaceutical research"? In case it may be thought that this question is superfluous, I may

state that I have found prominent pharmacists to differ considerably in their ideas, and not always to be ready with a statement. It is not, indeed, easy to state concisely what is to be distinguished as pharmaceutical research. All will agree that it means something more than an improvement of processes for the exhibition of drugs in pharmaceutical preparations. Does it mean problems arising out of the cultivation of drugs not hitherto grown within the Empire, or the intensive cultivation of indigenous drugs with a view to increased activity, or chemical investigation of drugs for their active constituents, or, again, does it mean research in organic chemistry for the production of new synthetic remedies, or does it mean pharmacological experiments, or all of these things? I would submit to you the following consideration: We have seen that pharmaceutical preparations of drugs continue to find employment even after the active principles of those drugs have been isolated, and are readily available in a pure state. We have seen that drugs and food-drugs are found to have valuable properties which cannot be stated in definite terms in the present state of our knowledge. Further than this, as our knowledge of such bodies as vitamines, enzymes, and hormones advances, so increases our respect for the natural source of such bodies—they may be glands or they may be seeds—whether as a food or as a remedial agent. Such may be the fate of many an "old-fashioned" remedy, about which hard words have been used merely because it was not fully understood. Here, then, it seems to me, is presented a most fitting subject for pharmaceutical research; to determine and control the conditions of collection and preparation of the parent drug, the process of treatment and manufacture, and the conditions of storage, to discover characters, and devise tests within the scope of the skilled, trained pharmaceutical chemist without involving experiments upon living animals, so that the pharmaceutical preparation exhibiting the drug shall be both active and uniform.

The Ministry of Health has appointed a Committee to consider and advise upon the legislative and administrative measures to be taken for the effective control of the quality and authenticity of such therapeutic substances offered for sale to the public as cannot be tested adequately by direct chemical means. None the less, in fact all the more, it behoves pharmacy to set and keep its house in order.

Business Aspects.

The British Pharmaceutical Conference is concerned with the scientific aspects of pharmacy, but we have now a "Practice Section," and it is right to consider also the commercial side. It is to be hoped that pharmacists themselves are realising the true worth of their services, which, whether we consider the manufacturer or retailer, have been so greatly undervalued in the past.

The value of a pharmaceutical product is not to be measured by the prime cost of the ingredients *plus* a percentage for labour and establishment charges. The cost of the ingredients may be a mere fraction of the ultimate value of a carefully made pharmaceutical product. One does not estimate the value of a sculpture by the cost of the materials, nor that of a picture by the price of the paint. Why should the value of lime water be based upon the cost of the water and the lime, or that of an eye lotion on the trivial cost of the ingredients? Such cases as these ought not to be beyond the limits of the intelligence of an ordinary citizen nor even of our legislators. More difficult to make plain is the case of a chemical manufactured on a large scale and distributed by the drug-trades: yet the adequate handling of a drug before it reaches the public involves a number of operations requiring technical knowledge, training, skill, and ceaseless supervision. Boric acid, to take but one example out of several hundred commodities handled every day by druggists, has to be most thoroughly sifted and mixed in order to ensure uniformity, freedom from grit and foreign particles, and a degree of fineness suitable for pharmacy, and this process of preparation is followed by a number of chemical tests accurately carried out by expert analysts, including determinations of lead and arsenic. The smallest slip or oversight in any part of the rigid scrutiny, and the Sale of Food and Drugs Acts accuse the unlucky victim of "adulteration," and hold him up to public obloquy.

Much of the legislation, both old and new, affecting pharmacists stands in need of thorough revision, and pharmacists should be freely consulted in the revising process; yet the rule seems to be to legislate in the dark and call for light afterwards. Instance upon instance could be given of grievous injustice being done by legislation, unwittingly and through ignorance, yet each generation of legislators seems incapable of learning the lesson which one would think it had inherited from its predecessors—viz., that it is necessary to understand a subject before you can make laws about it, and that if you do not know it yourself you should ask those who do. As things too often are, in the first place the pharmacist is not consulted; in the second place, when he protests he is not understood; and in the third place, when at length he is understood, as often as not he is ignored.

The Future.

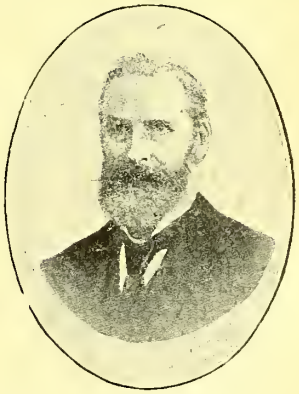
The annual meeting of the British Pharmaceutical Conference affords a great opportunity for all pharmacists to meet each other on common ground, and consider their common interests. Is not the present a period in pharmaceutical history at which it is fitting that all of us whose lot is cast in pharmacy should band together for our common welfare? The demands of the business side of pharmacy are to-day so imperious and so obvious that there is a danger of neglecting what, to my mind, is of primary importance if we are to persist. If I am asked what path should be pointed out for pharmacists to pursue in order that the present condition of affairs may be improved, and the outlook for the future made more bright, then I say without doubt that the answer lies in cultivating assiduously the scientific side of pharmacy, in the promotion, encouragement, and assistance of pharmaceutical research, in the improvement of pharmaceutical products, and in keeping pharmacy abreast of advances in chemistry, physiology, bacteriology, vaccine-therapy, and other kindred subjects.

Only by giving first place to the professional side of pharmacy—keeping as distinct as possible the purely business side and declining to mix with pharmacy proper business in things so far removed from drugs as to be derogatory to the calling of pharmacy—only thus will it be possible to maintain and enhance the esteem in which pharmacists are held by their fellow-men, both medical and lay men, as well as public bodies and Government Departments.

The British Pharmaceutical Conference exists for "the cultivation of pharmaceutical science" and "to maintain uncompromisingly the principle of purity in medicine." Let pharmacists see to it that the Conference receives full and generous support, and that no effort be spared to enable it to carry out these worthy objects. Thus shall pharmacists prosper and pharmacy flourish.



W. W. STODDART,
President at the Liverpool Conference in 1870.



W. MARTINDALE,
President at the Liverpool Conference in 1896.

Trade Notes.

"Don" Tin-filling Machine.—Roberts' Patent Filling-Machine Co., 33 Roundcroft Street, Bolton, illustrate this machine in their advertisement as the most perfect tin-filler.

Abbey's Effervescent Salt.—This saline, which was almost unobtainable during the war, is now supplied on demand by the British agents, William Edwards & Sons, 157 Queen Victoria Street, London, E.C. 4.

Urinometers are a speciality of Powell's Thermometer Co., 55 Hatton Garden, London, E.C. 1. In a recent advertisement the word was misspelled, and some of our readers may not have guessed what was intended.

"A Progressive House" is the title of the advertisement in this issue of the Veno Drug Co., Ltd., Chester Road, Manchester. The window-show terms should be noted for Veno's Lightning Cough Cure, Germolene, and Dr. Cassell's tablets.

Thompson & Capper, Ltd., Manesty Buildings, Liverpool, insert in this issue an account of the origin and present-day features of their business. It is interesting reading. The associated chemical manufacturing house, Holt, Thompson & Co., Ltd., also advertise salicylic acid, sodium salicylate, and acetanilide.

New Boxes for Old.—Prichard & Constance (Wholesale), Ltd., 469 Holloway Road, London, N., offer in their advertisement in this issue to replace all stocks of Amami nail stones in card cases by others in aluminium boxes. The aluminium boxes are much more attractive, and chemists should take advantage of the exchange offer.

Combs.—We have this week had an opportunity of inspecting the wide range of combs which Vernon Powell, Ltd., 9 and 10 St. Andrew's Hill, London, E.C. 4, is offering to the wholesale and export trade. The combs are in vulcanite, celluloid (ivory and black), galalith (French), and horn, and the prices asked seem to us reasonable. Large buyers should ask for quotations.

Cocoanut Shampoo Powder.—Arthur H. Cox & Co., Ltd., manufacturing chemists, Brighton, send us a specimen of cocoanut oil shampoo powder, which has been placed on the market as a companion preparation to the company's Liquid Cocoanut Oil Shampoo. The powder is smartly packed in envelopes printed in red and black, and sells at 4½*d.* per packet. Showcards are supplied with orders for a gross and upwards.

Intravenous Solutions.—*The Lancet* (July 10, p. 82), gives particulars of the sterilised solutions of gum acacia, which the Ministry of Health has arranged can be obtained from Evans Sons Lescher & Webb, Ltd., Bacteriological Research Laboratories, Runcorn. The solutions, which were employed extensively in military hospitals during the war in the treatment of hæmorrhage and shock, are supplied in stoppered bottles of 500c.c. at 1s. 6*d.* per bottle, plus a charge for carriage.

Sketofax Antiseptic Cream, which has just been put on the market by Burroughs Wellcome & Co., Snow Hill Buildings, London, E.C., should be a boon to the numerous victims at this time of year of bites from mosquitoes, gnats, and midges. Sketofax is packed in collapsible tubes, and is the outcome of a series of experiments as to the most effective combination for use as a culicifuge. The cream, which has a pleasant odour, is applied to the skin either as a preventive or to relieve the after effects of insect bites.

M. I. M. Lemonade Powder.—Raymet & Co., Ltd., manufacturing chemists, 507 and 509 Harrow Road, London, W. 10, are supplying packed lemonade powder under the brand designation M. I. M., these initials indicating that lemonade can be "made in a minute" from the powder. The beverage made from M. I. M. is a pleasantly flavoured one, each packet being sufficient for making half a gallon of lemonade. M. I. M. is packed in 6-doz. show outers, and showcards and window-bills are offered to chemists.

Chlorophyll.—The Sandoz Chemical Co., Ltd., 9 Victoria Chambers, Little Horton Lane, Bradford, send us samples of the various kinds of chlorophyll made by the Basle (Switzerland) house, for which the company are the sole consignees. Two of the samples, "Chlorophyll C. paste" and "Chlorophyll C. conc.," are soluble in oils and fats, and two "Chlorophyll S. tablets" and "Chlorophyll S. powder" are soluble in water and dilute spirit. The range of preparations in which chlorophyll is needed is thus well covered.

Rosine Perfumes.—It is not generally known that these French perfumes emanate from the well-known house of Paul Poiret, Paris, whose name has been before the public recently in connection with a law-suit in which Paul Poiret succeeded in restraining another business from using the name "Jules Poiret." W. H. Calnan & Co., 30-32 Ludgate Hill, London, E.C. 4, the British agents for Paul Poiret's perfumes, inform us that new showcards are being designed which will give prominence to the fact that the Rosine perfumes are owned by Paul Poiret, of Paris.

Clark's Compresso Doseur, particulars of which will be found in the advertisement of Mr. Cicero S. Clark, 12 Richmond Road, London, W. 2, in this issue, is a labour-saving appliance for filling cachets. When dipped into a heap of powder it picks up an amount controlled by a regulating sleeve, which is locked as soon as the desired quantity has been ascertained; with a touch of the plunger, the powder is then deposited inside the cachet. The filler is suitable for any kind of cachet. The filler is suitable for any kind of cachet, but those supplied by Mr. Clark have the convenience of closing without damping.

Eno's Landmark.—Eno's fruit salt is being advertised in London by one of the largest advertisements hitherto employed in the Metropolis. The illustration shows the sign which has been completed at London Bridge Railway



Station. This gigantic sign is believed to be the largest of its kind in existence, for it measures 175 feet. It is seen by thousands of persons daily. The artistic merit of the sign is an object-lesson to those who are interested in the development of the methods of modern publicity.

Information Department.

INFORMATION WANTED.

Postal or telephone information with respect to makers or first-hand suppliers of the undermentioned articles will be appreciated.

E/217. Machinery for making G.P.O. pill-boxes
E/167. Sunflower cream for patent-leather boots
B/167. Revivo hat-cleaner
F/167. Pino wool
E/227. "Lightning" Cleaner
S/176. Radio phosphate of potash
B/197. Mondollot's syphons; agents here
BB/197. Poudre Imperia
O/197. Cutch crystals
BA/217. H. & A. blood wine

Observations and Reflections.

By Xrayser II.

The Establishment

of a wages standard for chemists' assistants of every class—pharmacists (managing), pharmacists, chemists' assistants, registered and unregistered, etc., may or may not be a good thing itself, but whether for good or evil it carries with it certain effects which its promoters may not have realised. Ruskin long ago taught the doctrine of uniform wages, irrespective of the differences in the efficiency of the employés. Inefficiency ought, he held, to entail non-employment rather than lower wages; the best men should get the highest class of work in preference to men of inferior quality, but every man employed in the same class of work should receive the same wages. It is apparently on this principle that the basic rates proposed by the Amalgamated Society are fixed. Variations in the form of commissions and bonuses are, I gather, allowed, but even these are to be on a uniform scale. The fact, however, remains that human ability varies: of two men, each having the same experience and the same nominal "qualification," one may be actually worth a good deal more than the other to the person employing them, and (which is perhaps more to the purpose) may be quite aware of the fact. Obviously, if both are employed in the same work, the better man is, by comparison with his fellow-workmen, underpaid if he receives no more than he; he submits to an apparent injustice out of regard for his fellows. There are not so many grades of service in retail pharmacy that all the men conscious of superior ability can find places as managers, or even, it may be, as pharmacist assistants; while the variation in the actual value of unregistered men is infinite. I am not complaining of the rates proposed, or of the principle involved. I confess I do not understand some of the distinctions made, but that is another matter. I merely ask whether the best men will ever be really content to sacrifice themselves in the interest of the others.

Two Hundred Years Ago To-day

(July 18) was born Gilbert White (White of Selborne), to whom many of us owe our first conscious interest in natural history. It is long since I first read his book, but I still remember with what delight I read it, and very few later works of the kind have had for me the same charm. There are, however, exceptions. Richard Jefferies has perhaps a more intimate appeal, putting more of himself into his books, and so giving them a personal interest of a unique kind. The same is true of a yet greater writer who is still with us, Mr. W. H. Hudson, whose latest book, "The Book of a Naturalist," I have just read with as much pleasure as almost any of his previous works. Like White, Mr. Hudson writes largely of birds, and as I watch the gulls and other sea-birds from this Dorset coast I am conscious of my debt to the vivid and beautiful chapters in which in his books on Cornwall he describes their flight and general habits. This is the real value of such writings as his, and indeed of all art; it gives us eyes and ears, to all things and to life itself a new significance; it not only imparts knowledge, but quickens our apprehension by the increase of our wonder and love.

The Aproned Pharmacist

was not, unless my memory errs, so rare a bird fifty years ago as was supposed by the witty but prejudiced writer of your last week's "Retrospect." Until I came to London in 1867 I had seen few assistants without aprons, and they were worn habitually by all my employers up till then. My London governor would have none of them, but I was delighted to find them worn by the assistants at John Bell's, in Oxford Street, and when, four years later, I returned to the North they were still in common use there. My last employer in the retail, the most complete gentleman with whom I ever lived, allowed their use, and even wore an apron himself when employed in certain work in the back shop. Why should any article necessary or helpful in any honest employment be stigmatised as a "humiliating badge"? And how can an apron deserve this stigma more than the butcherly-looking overall, or whatever it is, which in many pharmacies has taken its place? Are not aprons, as your old contributor recognised, symbolical of craftsmanship and sound learning? Are they not, as such, worn by "Masons" and bishops—the very salt of the earth? Why not, then, by the pharmacist, upon whom they are at once emblematic and of practical use? Let the purveyor of meat stick to his white coat, but give me back my harmless, necessary apron.

Dean Inge,

while expressing the greatest respect for grocers, declares that he has no "message" for them.

My fairest child, I have no song to give you!

This, says a writer in the "Athenæum," is a neglect of duty on the Dean's part. "No message for grocers?" Why did he not remind them of their "high calling," and how they have fallen below it? Where are the grocers of the olden time, who imported their own goods, blended their own teas, roasted their own coffee—were in fact, real craftsmen, not mere retailers of packed and canned goods, as too many of them are now? As well ask with the poet, "But where are the snows of yesteryear?" Were I asked for a message to chemists and druggists, and were I to adopt the tone and style of "the gloomy Dean," I might, with even greater emphasis, ask, Where are the chemists and druggists of fifty years ago? Have not we declined from our high estate even more lamentably than the grocers, inasmuch as we have fallen from a greater height? We are better educated than we were so far as theory goes. Are we as well practised in the arts of production? Dispensing apart, I fear not. But for the National Insurance Act, how many of us would be mere distributors of other men's goods? That it has to some extent saved us from this fate is, in my opinion, the greatest benefit the Act has done us. We should do little else than hand things across the counter, but for it. I shall be told that this pays better than making our own preparations. Possibly, though I doubt it. Even so, the fact remains that what pays best, not pride in our own work, is now with most of us the chief consideration. The till, not the officine, is the pivot of our "craft." Some of us are even preparing to scrap dispensing because it does not pay. It used to pay when it was but "the roof and crown" of our ordinary shop-work. If it pays no longer, may this not be because it is now a sort of detached movement, and no longer symptomatic of our general skill in pharmacy as a productive industry?

I should like to see

a reproduction of the document relating to celestial treacle of which your Paris correspondent gives an all too brief account. Such preparations as it advertised were common enough, and though, being away from my books, I cannot speak positively, I fancy the epithet "celestial" was applied to others as well as to it. Mithridate and treacle were, of course, two distinct preparations, but were a good deal alike in composition and had the same general character and intention. Both were retained in our P.L. (I speak from memory) until 1788, though they had to a great extent fallen into disuse. The Edinburgh College led the way in discarding them, substituting for Venice treacle a much simpler preparation of its own, containing only eight or nine ingredients (of which opium was the chief) in place of the seventy or eighty contained in the contemporary London preparation. When I was an apprentice, and for some time afterwards, mithridate was still occasionally asked for in the shops. Goodness only knows what was supplied.

VERMIN-KILLERS on which rats appear to thrive are being sold in a district in Wales where there is a plague of rats, according to the "Empire News." How it was ascertained that the poisons are eaten by the rodents is not stated.

"SANITAS"
DISINFECTANTS
FLUIDS, POWDERS, SOAPS & FUMIGATORS
Should be stocked by all Chemists.
THE "SANITAS" CO., Ltd., Limehouse, LONDON, E. 14



HAYWARD'S
YELLOW PASTE
The Best Fly Dip. Please write
TOMLINSON & HAYWARD, Ltd., LINCOLN.

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CHEMIST'S DICTIONARY OF MEDICAL TERMS. 3/6, by post 3/10.

MEDICINAL CAPSULES
TO THE TRADE ONLY.
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OIL OF LAVENDER
"EXQUISIA"
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PURE NATURAL FRENCH LAVENDER, DISTILLED UNDER PERSONAL SUPERVISION.
Write in advance for New Crop Prices.
Supplies strictly limited.
Sole Consignees :
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THYMOL
British White, B.P.
H. RUBECK, DISTILLER OF ESSENTIAL OILS — Established 1856.
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NATIONAL M.R.P.L.
Minimum Retail Prices, Dispensing Charges, Packed Goods Prices.
Revised Monthly by 250 Pharmacists.
"Stick to the M R.P.L."— Glyn-Jones.
ADOPTED BY 150 Chemists' Associations.
5/- p. a., from 194 BISHOPSGATE, E.C. 2.

PATENTS AND TRADE MARKS.
There are many worrying difficulties to be overcome in connection with the Registration of Trade Marks and the grant of Letters Patent which members of the Retail and Wholesale Drug Trade can avoid by consulting an efficient agent, who would undertake all the trouble for an inclusive fee and obtain protection in the United Kingdom and abroad. Advice in the first instance free. Pamphlets gratis.
58 Ludgate Hill, London, E.C. 4. REGINALD W. BARKER.

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BRITISH ABSOLUTE ALCOHOL
Jas. Burrough Ltd. D.1 Cale Distillery, Hutton Rd. LAMBETH, S.E.11.

Editorial Articles.

Reviewing Progress in Pharmacy.

Fifty years ago the British Pharmaceutical Conference met in Liverpool for the first time; the second visit was in 1896, and this week for the third time the Conference is being held in the great city on the Mersey. The Conference of 1870 was presided over by Mr. W. W. Stoddart, a Bath pharmacist, who developed an analytical practice and acquired considerable reputation as a scientist. The sittings of the Conference were held in the Royal

Institution, as they have been this week, and the features of the meeting were Joseph Ince's "Century of Old Books" and the exhibition of chemicals and pharmaceutical apparatus. The President's address had not, at that early stage of the existence of the Conference, become the elaborate treatise that it is expected to be now, and Mr. Stoddart contented himself with a review of the developments in chemistry and pharmacy that had taken place in the previous year. Looking through his address, we came across the following remark, which seems singularly prophetic in view of the "test case" that is before the Courts at the present time: "Let us always beware of infusing a mercenary spirit into the conduction of our Pharmaceutical Society. Its main object is and ever must be the upraising of our pharmaceutical education, and not the lowering it into a trades union, a spirit which I am bold to say would prove its ruin." The next Conference to be held in Liverpool was in 1896, when Mr. William Martindale was President. He reviewed the progress of pharmacy since 1868 in an endeavour to show the substantial improvement in pharmaceutical science. Incidentally, Mr. Martindale laid stress upon the necessity of the pharmacists' remuneration being considered not for material supplied but for special services rendered both in the sale of simple drugs and of compounded medicines. There was no Profiteering Act in those days. We have referred to the previous visits of the Conference to Liverpool partly because we find that apparently the kind of address which is expected from the President when he visits that city is a review of progress over certain periods. This year Mr. C. A. Hill deals with "Progress in Science and Pharmacy" in a skilful manner (see p. 69). Mr. Hill was President of the Conference during two war years, and it was a happy thought to utilise his services in a year when normal conditions are within reach. In his presidential address Mr. Hill refers to Mr. Martindale's remarks twenty-four years ago regarding the use of active principles in place of natural drugs and the introduction of synthetic remedies. Mr. Hill contends that, notwithstanding the enormous growth in the use of synthetic drugs which has taken place since 1896, galenical preparations are used on a larger scale than ever. Moreover, it is becoming recognised that active principles do not accurately represent the parent drugs in medicinal effect. This last statement is strikingly shown in the case of opium, nux vomica, belladonna and hyoscyamus, digitalis, ipecacuanha and cinchona. It is pointed out, for example, that opium contains more than twenty different alkaloids possessing varied physiological properties. Morphine has a well-known depressant action on the central nervous system, and codeine has a similar though milder action. Papaverine is a narcotic less powerful than morphine. Narcotine, which exerts little or no narcotic effect, produces a condition of excitement rather than depression. Laudanine and thebaine exert a strychnine-like action, while cryptopine and protopine act on the central nervous system somewhat like morphine. It has been shown that upon adding narcotine to morphine the mixture has a greater narcotic effect than when morphine alone is employed, although narcotine alone possesses little or no narcotic action. Papaverine alone does not affect the action of morphine, yet it considerably increases the activity of mixtures of morphine and narcotine. In addition to the alkaloids, there are present in opium organic acids, such as meconic and lactic acid, sugars, gums, etc.; the presence of these substances in morphine preparations serves to delay and sustain their action. Since sustained action of this type is what is usually required in a narcotic drug, and, on the other hand, rapid absorption of the drug may prove dangerous, the reasons why galenical preparations of opium retain their popularity are clear. Similarly, in the case of nux vomica, the extractive matter in a galenical preparation doubtless affects the rate of absorption of the strychnine, and other modifications may be caused by the presence of brucine. Hyoscyamine occurs in both belladonna and hyoscyamus, and yet the preparations of the two natural drugs continue as distinct medicaments. No combination of the substances that have been isolated from digitalis has the valuable properties of a good tincture, and it is brought out in an interesting manner that so-called de-emetised ipecacuanha probably depends upon its success in dysentery to the fact that the small amount of alkaloid retained in the powder is given up very slowly, an action which is imitated in the newest treatment with emetine bismuth iodide. Mr. Hill gave a brief review of advances in bio-chemistry, chiefly in regard to vitamines, and then referred to the scheme for pharmaceutical research which Mr. Kirkby placed before the Conference last year. We gather that no progress has been made with the scheme, and although the Department of Scientific and Industrial Research is sympathetic, Mr. Hill suggests that perhaps the Ministry of Health might provide some more substantial help than sympathy. As we have pointed out, research in pharmacy is largely a financial question, and some substantial source of money must be tapped before any scheme can hope to be a success. The American Pharmaceutical Association, the body in the United States which corresponds to the British Pharmaceutical Conference, has turned its attention in connection with research to the Division of Medical Sciences of the National Research Council which, like our own Department of Scientific and Industrial Research, has received very large grants of money from the State. It is certain that the possibilities of pharmacy as a field of research for the benefit of the nation have not received proper attention from public bodies. Dealing with the general condition of the Conference, one cannot help feeling that the finances are in a serious state; it looks as though the publication of the "Year-book" may have to be suspended owing to the high cost of production. The slightly higher subscription now obtained will not help very much to remedy matters, but this should not affect the movement towards popularising the Conference. It is an encouraging omen that the Liverpool meeting has brought in a large number of new members. Following the Liverpool Conference of 1870, when there were 600 members, the membership increased within the year to 1,500. There is no reason why this year's Conference should not bring similar popularity. It may be worth while to appoint a Committee specially to consider means of increasing the membership. It is necessary, however, that the cost of the "Year-book" shall not exceed the subscriptions of the members, otherwise the financial position would not be relieved.

The Conference Papers.

THE objects of the British Pharmaceutical Conference are chiefly to increase the facilities for the cultivation of pharmaceutical science, to investigate pharmaceutical problems, and to maintain the principle of purity in medicine. It is these objects which are kept in view in accepting papers to be read before the Conference, the contributions being now relegated either to the Science or Practice Section. The last-named section is a development of recent years, and a concession to members who held that questions connected with pharmaceutical policy

did not receive sufficient attention. The title of the section does not altogether suit the subjects covered by the section as "practice," but is used for want of a better. The division of the work of the Conference into two parts enables more papers to be got through in the time, as meetings of the sections are carried on simultaneously. This year the number of communications is up to the average, and we note in this, the first Conference to be held out of London since the declaration of war, a tendency to revert to the older form of the meetings. Innovations in the time and day of meeting have not hitherto been entirely successful, and the Liverpool Committee has, we think, acted wisely in reverting to the orthodox programme, which is a "known, admitted, and approved" mixture of science and sociability. The tendency of the papers in the Science section is this year distinctly on the chemical side, but in every case pharmaceutical science prevails as required by the constitution of the Conference. The following review of the papers does not follow the order in which they were read, but a classification of our own. The object of these abstracts is to enable our readers to obtain at a glance an idea of the scope of the papers, and it should act as an encouragement to read the full papers or longer abstracts given in our report on the proceedings of the Conference. Cinchona retains its old fascination for the pharmacist, and, indeed, has aroused increased interest of recent years. The exhaustive botanical and chemical investigations on some varieties of cinchona bark embodied in Messrs. Bernard F. Howard and Oliver Chick's paper on some recent samples of "*grey*" *cinchona bark* will be read with interest as a further valuable contribution to our knowledge of that drug, which all advances of modern synthesis have failed to dislodge from its commanding position in our materia medica. Of recent years an extensive use has been made of the *properties of saponin*, and Messrs. Jules Cofman-Nicoresti and Snow B. Tallantyre presented an interesting paper detailing the results of their investigations into the varieties of quillaia bark found on the market, and gave a method of extracting the saponin these contain, as well as a process for determining the content of saponin in the aqueous extract from the bark. The latter process may also be utilised to determine the amount of saponin present in tincture of quillaia. Their investigations extended to a study of the property of saponin of retaining gases in solution, and of its emulsifying properties, as well as the determination of the saponin content of a number of commercial samples of this substance. To avoid the loss of time involved by the troublesome filtration prescribed in the B.P. method of *assay for liniment and tincture of aconite*, Messrs. E. J. Chappel and Noel L. Allport suggest a process whereby this filtration is rendered unnecessary and the alkaloid is directly extracted. This paper is particularly interesting to the practical pharmacist, as showing how a tedious test may be simplified as a result of experimental research by those called upon to apply it frequently. The advisability of establishing a definite *standard for strophanthus* is urged by Mr. C. T. Bennett, who drew attention to the great differences existing between the various standards at present adopted for the physiological standardisation of this drug. He also suggested the advisability of studying the question of replacing the drug by one of its glucosides, in which case it would be necessary to determine definitely the characters of the variety of strophanthin adopted, an investigation which would involve an exhaustive study, not only of their chemical and physical characters, but also of the therapeutic and pharmacological actions of the various strophanthins so far isolated and identified. Mr. T. Tusting Cocking contributed a paper on the formation of a compound of cineol and ortho-cresol, to which he has given the name of *cresineol*, and, in view of its constituents, it is not unlikely that it may be found to prove of therapeutic value. In a second paper Mr. Cocking described how the formation of this compound of cineol and ortho-cresol can be employed for the determination of cineol in eucalyptus oils by the cryoscopic method, and compared the results obtained by the determination of the freezing-point of the resulting mixture with those obtained by the official Pharmacopœial method, which is based on the estimation of eucalyptol phosphate. A useful and simple method of estimating *phenol and salicylic acid in ointments* was described by Mr. G. D. Elsdon, based on the iodometric determination of both chemicals. A valuable contribution to volumetric analysis is embodied in the results contained in Mr. R. Leitch Morris's paper on the *determination of hydrocyanic acid*, in which the author gives a critical examination of a comparative investigation into the various methods which have been introduced for the volumetric determination of cyanides. An exhaustive contribution on *mercuric oxycyanide* formed the subject of Mr. A. J. Jones's paper, who detailed the results of his investigations on commercial samples of this preparation, its characteristics, and particularly the causes productive of explosions in the course of manufacture. He described a method of preparing the pure salt, and concluded by suggesting the advisability of establishing whether this compound has any distinctive medicinal and bactericidal properties justifying its retention in our materia medica. If this is the case, then the pure salt only should be supplied, taking all necessary precautions in its manufacture. Mr. J. L. Lizius contributed a paper on the detection of *inorganic phosphate in glycerophosphates*, in which he pointed out the sources of errors arising from the application of the test described in the United States Pharmacopœia. By decreasing the amount of the salt in applying the test it is possible, by the method he suggests, to detect the presence of 0.1 per cent. of inorganic phosphate. An interesting investigation into the value of certain substances as *preservatives for hydrogen peroxide* was undertaken by Mr. H. R. Jensen, who summarised his observations in tabular form. His results show that the purity of the preparation is really the most important factor to ensure stability, and that the rate of decomposition depends largely upon the nature of the impurities present. In spite of its extensive use *acetyl-salicylic acid* (aspirin) still presents a number of problems which await elucidation. We are indebted to Mr. A Nutter Smith for the elaborate research work contained in his paper on *the determination of free acetic acid in acetyl-salicylic acid*, and for the analytical methods he has elaborated. His deductions concerning the constitution of this substance are also of considerable interest, as they tend to throw further light on its behaviour. The introduction of *plaster mulls* certainly presented a distinct advance in pharmacy, by affording a convenient and also cleanly method of applying certain remedies to be absorbed by the skin. Unfortunately, prior to the war no British firm attempted their manufacture, which was specialised in Germany. We are indebted to Mr. A. W. Gerrard for the valuable information, based on his wide experience of the subject, contained in his paper on plaster mulls. It is to be hoped that his valuable hints will prove an incentive to retain

the gain made during the war, and that British manufactured plaster mulls will render the use of the German product superfluous, and even compete with it in the foreign markets. That with the modern tendency to elaborate new compounds the possibilities of presenting the older, well-known drugs in a therapeutically more active form have been greatly overlooked is evidenced by the interesting facts communicated by Mr. H. R. Jensen in his paper on *adsorption medicines* and similar remedies with local action. We are informed how compounds of alkaloids, and other drugs, with fuller's earth display a very high therapeutic effect, of a character hitherto not obtained by their exhibition in the usual pharmaceutical forms. These results, based on clinical evidence, open up a wide field for the pharmacologist, and indeed suggest new lines of therapeutic treatment. Messrs. Norman Evers and H. J. Foster contributed a paper detailing the results of their examination of two samples of an *oil of mutton bird*, which is obtained from a bird in the Antarctic regions, and which had been suggested as a substitute for cod-liver oil. In this connection we might draw attention to attempts which have been made to administer cod-liver oil to children by the dermal route, by massage, but which we believe have not proved very successful owing to the aversion the patients exhibited to the smell of the oil. A clinical trial might possibly demonstrate the utility of mutton-bird oil for this form of medication. The Practice section had before it an important paper by the Clerk of the Salford Insurance Committee and the Salford Public Analyst on the question of *National Health Insurance dispensing* from the point of view of the Sale of Food and Drugs Acts. The authors agreed that some latitude from scientific accuracy is permissible in Insurance dispensing—10 per cent. in the case of potent drugs, and perhaps 15 per cent. in such drugs as sodium bicarbonate. The Salford scheme for sampling dispensed medicines was given. Another paper in this section was connected with the *pharmaceutical curriculum*. In his paper on *the four thousand hours and after*, Mr. J. L. Hirst suggests a new method of entry into the ranks of the pharmaceutical profession, which at first sight sounds decidedly revolutionary, and even savours of a curtailment of the right of the individual pharmacist to select his apprentices according to his own ideas. However, as the official portal is to be through the local Association, there is no surrender of individual rights, except such as have perforce to submit to the opinion of the majority in establishing any collective organisation on a uniform basis. Mr. Hirst's suggestion to approach the secondary schools is an admirable one, and in this connection we may mention that in some Continental countries the organisations of various professions distribute to the educational establishments brief descriptions of their respective professions, setting forth the curriculum, the nature of the calling in question, its prospects and emoluments, in order to acquaint both parents and candidates with the actual facts. They also, when necessary, issue warnings against entering a momentarily overcrowded calling. This was one of a series of papers contributed by local Associations in the Liverpool district. Mr. J. P. Gilmour dealt with the eternal question of *ethical problems in pharmacy*. We give the discussion on the papers elsewhere in this issue, our report covering the proceedings up to Wednesday night. On our press day the Heart of Wales, so pleasantly discoursed of by Mr. R. Cecil Owen in the Special Number of the CHEMIST AND DRUGGIST, is being explored by the members, and if the weather in Wales is as summerlike as it is in London the excursion is bound to be a success, and to leave in the minds of the members a pleasant memory of the Liverpool Conference of 1920.

Personalities.

T. J. SMITH & NEPHEW, LTD., surgical-dressing manufacturers, have appointed Mr. Clifford Garner, son of their London manager, to represent the company on the Home Counties ground.

MR. G. THOMPSON WILSON, Ph.C. (Ireland), has joined the staff of Kay Brothers, Ltd., Stockport, as sales manager. Mr. Wilson was for many years with a well-known London manufacturing house.

AT THE RECENT EXAMINATIONS held in London, Mr. Harold H. Sumption, pharmacist, Blackwood, Mon., passed the second examination for the degree of M.B.B.S. He is a student at St. Mary's Hospital Medical School.

LORD MOULTON was entertained to dinner in London on July 21, in recognition of his work during the war as Director-General of Explosive Supplies. He was presented with a silver loving-cup, suitably inscribed, as a memento of the occasion.

IT IS STATED in the Press that Sir Jesse Boot has contributed 50,000*l.* towards the funds of Nottingham University College, for which a university charter is being sought. Some of the money is to be applied to the foundation of a Chair of Chemistry.

MR. DAN DAVIES, chemist and druggist, 324 Coldharbour Lane, Brixton, has been awarded the medal of the Order of the British Empire for war services. Mr. Davies was pharmacist to the Honour Park Auxiliary Hospital and an officer in the Lambeth Emergency Air-Raid Organisation.

DR. W. D. COOLIDGE, the American inventor of the Coolidge *x*-ray tube, gave an address to the members of the Röntgen Society at University College, Gower Street, on July 16, in which he dealt with some of the problems in connection with *x*-ray work that had been successfully solved.

To perpetuate the memory of the late Alderman Richard Fitzhugh, J.P., Ph.C., the Council of the Nottingham Pharmaceutical Association decided to found an annual exhibition for the most successful student of the session in the Pharmaceutical Department of University College. Acting on the advice of the professional staff, the trustees have nominated as first "Fitzhugh Exhibitioner" Mr. Edward A. Wood, who has been a student in the Department during the session 1919-20. Mr. Wood was educated at the Chesterfield Grammar School, and has spent the whole of his pharmaceutical career under Boots Ltd., being apprenticed at their Shakespeare Street establishment under Mr. C. E. Reynolds. During the war Mr. Wood saw service in the Special Brigade, R.E.

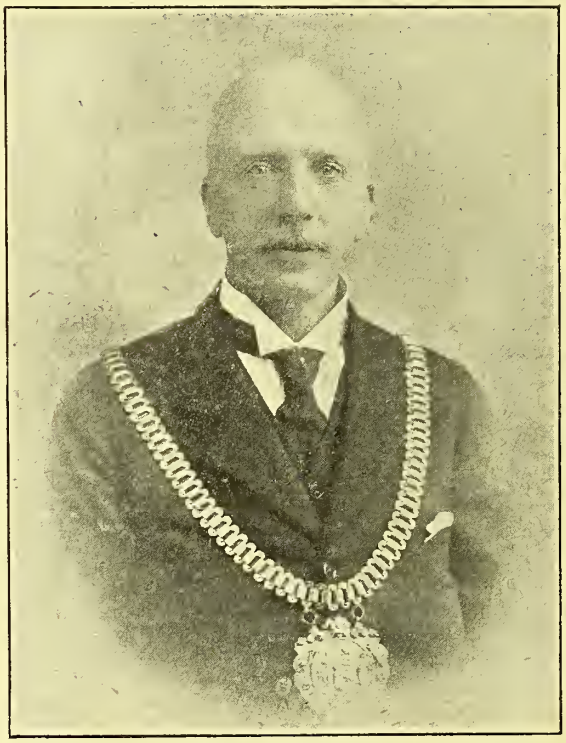
A REMARKABLE SEQUEL to the publication in last Friday's "London Gazette" of a receiving order in bankruptcy against Mr. John de Lysle, described as a manufacturer's agent and director of companies, of 47 and 48 Berners Street, W., has just come to light, states the "Daily Telegraph." Some days earlier a petition had been filed against him, and as the result of official inquiries suspicions were aroused. The police were instructed to keep a watch at ports of embarkation, and it is reported that a warrant was issued by the Bankruptcy Court for the arrest of Mr. de Lysle for certain alleged offences under the Bankruptcy Acts. Steps were taken to effect the arrest on July 15, but it has now been ascertained that Mr. de Lysle left the country in an aeroplane on the previous day. On his representation that he had urgent business in Paris, a special machine was placed at his disposal at the Croydon Aerodrome, and he made the journey by air on July 14, arriving in Paris the same evening.

"THE END OF THE WAR" has not arrived yet, and cannot be fixed by Order in Council until the last of the Treaties of Peace has been signed and ratified. The war with Germany terminated on January 10, 1920.

BRITISH PHARMACEUTICAL CONFERENCE

Report of Proceedings

Tuesday opened with a brisk breeze, that increased in freshness as we made our way up to the high ground on which the Cathedral is being erected. The special service in the exquisite Lady Chapel was obviously an attraction to the members of the Conference, the building being full to overflowing. The Lesson was read by Mr. Henry Peet, M.A., Adelphi Pharmacy, with delicate emphasis and point; and the small choir had its opportunity in Oakley's well-known anthem "Comes at times," with which a singularly fine effect was made. The opening and closing hymns enabled the organist to display the admirable balance of his new instrument; and the service was completed with an address by Archdeacon Spooner, who prefaced it with a welcome to the Conference on behalf of the Bishop of Liverpool. From the service we made our way to the Royal Institution, Colquitt Street, the lecture-room of which was well filled when the Mayoral procession ascended the platform. Of those who signed the visitors' list in 1896 many have passed away, and one missed the names of S. R. Atkins, Michael Carteighe, W. L. Howie, F. H. Lescher, Peter MacEwan, William Martindale, and J. C. Umney. Twenty-four years and twenty-six years, the intervals between the three Liverpool Conferences, together make half a century, and it would be interesting to know how many of those present this year can remember the Conference of 1870. Supporting the President (Mr. C. A. Hill) on the platform were the Lord Mayor of Liverpool (Mr. Burton W. Eills), Mr. William P. Evans (chairman of the Local Committee), Dr. Charles Symes, Mr. E. M. Holmes, Mr. J. E. Connor (President of the Pharmaceutical Society of Ireland), Mr. F. Ransom, Mr. D. H. Evans (President of the Liverpool Chemists' Association), Mr. T. H. W. Idris, Mr. W. F. Wells, Major E. Saville Peck, Sir William Glyn-Jones (secretary of the Pharmaceutical Society of Great Britain), and the secretaries of the Conference (Mr. R. R. Bennett and Mr. C. H. Hampshire). The Lord Mayor, in welcoming the Conference, was ideally genial and concise. He insisted, to the accompaniment of spontaneous laughter, that Liverpool is the second city of the Empire, and added a few pointed suggestions as to the value of research. The President thanked the Lord Mayor for his welcome and for the handsome reception of the previous evening, and forthwith put a resolution of thanks to the meeting. The Lord Mayor received an ovation on rising to reply. After a grateful acknowledgment he took his departure, the members standing as he left the platform. The President, before taking in hand any business, delivered his address, which is printed in full on p. 69. Shorter than those of several, and perhaps most, of the Presidents of past years, it was delivered with all Mr. Hill's accustomed lucidity, and many points in it were quickly taken up by the Conference, applause being frequent. Dr. Symes, senior Vice-President, moved a vote of thanks to the President in a delightfully tonic speech, full of vigour and hopefulness. Mr. E. M. Holmes seconded the vote in cordial terms, incidentally remarking that Liverpool is the home of a great deal of chemical research. Mr. William P. Evans put the resolution, and its reception was of the heartiest. The ladies then withdrew, on pleasure bent, and the usual reports were presented. The treasurer (Mr. D. Lloyd Howard) made an earnest plea for increased subscriptions, in which he was backed up by Mr. T. Edward Lescher. The Science Section occupied the remaining time till luncheon, and in the afternoon the science and the practice sections were both in full cry. Several papers were gone through, an interesting feature in the science section being the presentation by Mr. E. M. Holmes in person of his report on "grey" cinchona bark written for Messrs. Howard and Chick's paper on the subject. The proceedings at the dinner in the evening are reported on p. 104. The Practice Section did not begin its sittings until the afternoon, the feature being the protests made regarding the paper on National Health Insurance dispensing. The social functions, which are reported in a special section of this issue, were invariably successful. The presentations at the smoking concert on Wednesday showed the appreciation of the visitors at the way the Local Committee had catered for their enjoyment. The Harrison Memorial Fund benefits to the extent of 52*l.* by the smoking concert.



The Lord Mayor of Liverpool, Mr. Burton W. Eills, who welcomed the British Pharmaceutical Conference to Liverpool.

Tuesday Morning.—July 20.

The chair was taken by the President (Mr. C. A. Hill, B.Sc., F.I.C.), who at once called upon the Lord Mayor of Liverpool.

The LORD MAYOR: Mr. President, ladies and gentlemen, I am here to-day to give you a cordial and hearty welcome to the city of Liverpool. Of course, I met most of you last night and shook hands with you individually, but I am here now in my capacity as Lord Mayor of the city to give an official welcome to the Pharmaceutical Conference, which has selected Liverpool as the place of its meeting this year. (Applause.) We realise what an important body you are, and how much we owe to the Pharmaceutical Association, and, of course, in selecting Liverpool I think you have selected wisely, because Liverpool is a very big and a very important city, and has played a great part in the recent war; and, at the same time, I think the city stands very high in the opinion of your Conference, because of the important part of the trade which is carried on. Well, now, I hope you are going to have a very enjoyable and a very profitable visit, and Liverpool will show you many things which you cannot see in other towns. I understand that you have had a very profitable morning; you have attended the Lady Chapel, and, I understand, there you have participated in an attractive service. The Cathedral is a very fine one; of course you cannot judge of its size by the present erection, but I can tell you that the Cathedral, when finished, will be the largest cathedral in the whole of the country. We have our docks, and we are very proud of our docks and of our shipping, and of the work carried on in this port, because Liverpool is the chief port in the country, in fact, I may say it is the principal port in the Empire; and, although some of my friends, who I have no doubt are here from the other side of the Border may not agree with me, I maintain, and I maintain in spite of all opposition, that Liverpool is the second city in the Empire. (Laughter and applause.) I am not going to detain you any longer; I know that you have a very long programme, and that you have a lot of work to do, and I have no doubt that work will particularly interest those of you who take an interest in the technical side of your profession, but I would like to say this: That I think the lessons of the war have taught us a great deal, and they have taught us this, that we must take more serious notice of the everyday problems—we must not leave things to chance. (Hear, hear.) I know that before the war we used to get all sorts of patent medicines and patent foods and things from Germany. I can remember a striking case in point—we used to get Sanatogen from Germany; but now, fortunately, the war has changed these things, and we get Sanatogen from England. There are many things that we should do: it is not sufficient for you simply to practise your profession; I think you want to go deeply into research—(applause)—and I am satisfied the results would be that we should stand prominently forward in the profession, because I am not going to admit that the brains of this country are inferior to those of other countries—(hear, hear)—and I feel sure it is only because sometimes we do not exercise them sufficiently that perhaps we do not get into the most prominent position. When I see such an influential gathering as this, composed of members from all parts of the kingdom—I have no doubt we get them from as far north as Elgin and from as far south as Penzance—when I see such a gathering, bringing all this experience together, I am sure that by a wise and proper interchange of views and experience you will make considerable progress at this Conference at Liverpool; and, I again repeat, I wish you most cordially welcome, and I hope that when you return to your respective homes you will be quite satisfied with your visit to Liverpool. (Loud applause.)

The PRESIDENT: My Lord Mayor, ladies and gentlemen, on behalf of the British Pharmaceutical Conference, I desire to acknowledge the courteous and kind reception which you, my Lord Mayor, have just extended to us on behalf of this city. As you yourself observed, my Lord Mayor, we have chosen well in selecting Liverpool for our meeting this year. The Conference has met in Liverpool before, and some of us who remember that occasion carry doubtless very happy recollections of a highly successful meeting, but the majority of us are attending the British Pharmaceutical Conference in Liverpool now for the first time. We come here with great expectations, and after what has already happened, and from the programme we see in store for us, we feel confident we shall not be disappointed, and that these great expectations will be more than fulfilled. I want to thank you for coming here this morning in person to extend to us this welcome, and also for the very handsome reception which you gave to the members of the Conference last night. (Applause.) We thank you not only for affording us such a happy opening to our meeting, but for coming down in person to grace and, with the presence of the Lady Mayoress, to adorn our opening proceedings. You will notice that the British Pharmaceutical Conference stands for the extension of our knowledge in pharmacy, and I would like you to know that it exists primarily for prosecuting the scientific side of pharmacy; so we shall bear in mind your advice to carry operations into the field of research, and see what can be done in extending our knowledge and in making this country independent of Germany and other countries for pharmaceutical products. On behalf of this Conference, I ask you, my Lord Mayor, to accept our grateful thanks for what you have done to receive us and make us so welcome and comfortable. (Applause.)

The Conference, on the call of the President, carried the vote with applause, and the LORD MAYOR, in acknowledging the compliment, said that, as chief magistrate of the city, he should have been wanting in his duty, if he had not extended civic hospitality to so important a body as the British Pharmaceutical Conference. His lordship expressed regret at his inability to attend the annual dinner that evening, and hoped that it would prove a very enjoyable function.

PRESIDENT'S ADDRESS.

The President then delivered his address to the Conference. The address is reported in full on p. 69.

VOTE OF THANKS.

Dr. C. SYMES, senior Vice-President, proposed a vote of thanks to the President for his very able address. The President had given them much to think about, especially in the field of research. They were largely handicapped by the restrictions on alcohol, and while legislation was endeavouring to kill whisky it was also killing investigation; and there was the danger that unless some step were taken other countries, where there was an untrammelled use of alcohol for research purposes, would take a leading position.

Mr. E. M. HOLMES, in seconding the vote of thanks, said the President had given them, in tabloid form, scientific information of the last twenty years in a most lucid and instructive manner.

The resolution was put to the Conference by Mr. WILLIAM P. EVANS, and carried with applause. The PRESIDENT briefly acknowledged the compliment.

DELEGATES

The list of delegates to the Conference was read by Mr. C. H. HAMPSHIRE. Representatives were present from the Pharmaceutical Society of Great Britain, the Pharmaceutical Society of Ireland, and the following Associations: Aberdeen, Birmingham, Devon, Dublin Retail, Ealing, Edinburgh, Hampshire, Lancashire, Leicester and Leicestershire, London County, London (Western), London (North), London (South-East), Manchester, Maryport, North Devon, Nottingham, Oxford, Portsmouth, Public Pharmacists', Scarborough and North Riding of Yorkshire, Somerset County, Southampton, and Wrexham. The Warwickshire and Wolverhampton Pharmaceutical Committees were also represented.

Executive Committee's Report.

Mr. Hampshire then read the annual report as follows :

In presenting the fifty-seventh annual report your Executive Committee is gratified to be able to report a substantial increase in the number of members since the last annual meeting. On July 20, 1919, there were 873 members on the Register; to-day there are 1,052, a net increase of 152, although six resignations have been received and twenty-one members have been lost by death. In the latter connection the Executive especially mourns the death of Mr. J. C. Umney, who was treasurer from 1898 to 1912, and President of the Conference at its jubilee meeting in 1913. In last year's report reference was made to the death of Lieut.-Col. E. F. Harrison, C.M.G., and since then a Joint Committee representing the Pharmaceutical Society and the British Pharmaceutical Conference has been formed for the purpose of raising a fund to provide a fitting memorial to this distinguished member of the Conference. The money available is proposed to be devoted as follows :

(1) To provide a medallion or similar memento to be placed in the Pharmaceutical Society's House.

(2) To institute a scholarship tenable at the Pharmaceutical Society's School.

(3) To supplement the Prize Fund already raised by the Chemical Warfare Department if the funds allow of this after objects (1) and (2) have been amply provided for.

It is estimated that for this purpose 2,000*l.* will be required. A number of subscriptions have been received, and the first list of these will be published shortly. The subject of pharmaceutical research, raised by Mr. W. Kirkby in his presidential address last year, and later submitted to the Executive Committee in the form of "A Draft Scheme for Pharmaceutical Research," has received the earnest attention of the Executive Committee. In March last one of your secretaries was invited to attend a meeting of the Pharmaceutical Society's School Committee. The various aspects of Mr. Kirkby's scheme were discussed, and the School Committee proposed to recommend to the Council of the Pharmaceutical Society that a conference of persons representing (*a*) the Pharmaceutical Society, (*b*) the British Pharmaceutical Conference, (*c*) the Drug Club, (*d*) the Association of British Chemical Manufacturers, should be called by the secretary of the Pharmaceutical Society jointly with the secretaries of the British Pharmaceutical Conference. The Council of the Pharmaceutical Society has since recommended that the members of their House Committee should discuss the matter further with the Executive Committee of the Conference during the present meeting in Liverpool. . . . Your Executive have the greatest pleasure in reporting that an invitation to visit Scarborough next year will be given at the present meeting, while invitations have also been received for 1922 and 1923. The continued desire of pharmacists in various parts of the country to extend hospitality to their fellow-members of the Conference is very heartily appreciated. . . .

In moving the adoption of the report, Sir William Glyn-Jones said they could regard the report as a satisfactory one, considering the circumstances under which the work of the Conference had been carried on during the past year. Referring to the proposed memorial to the late Colonel Harrison, Sir William said that, largely owing to the modern development of war, they could rightly describe Harrison as a great soldier; and he was a greater soldier because he had previously been a great pharmacist and a great chemist, and his life and his sacrifice had ensured a lasting memory.

Mr. J. Rutherford Hill seconded, and congratulated the Executive on the patience and ability with which they had carried on during the terrible period of the war.

The report was adopted.

Treasurer's Report.

The Treasurer (Mr. D. Lloyd Howard) then presented his report, which is summarised as follows :

The statement of receipts and expenditure for the year ended December 31, 1919, showed an adverse balance of 157*l.* 2*s.* 7*d.* (the adverse balance the previous year was 108*l.* 3*s.* 5*d.*). The income was 617*l.* 19*s.* 3*d.* (last year, 422*l.* 12*s.* 9*d.*), made up of subscriptions, 456*l.* 17*s.* 9*d.* (against 312*l.* 6*s.* 9*d.*); sales of "Year-book," 38*l.* 6*s.* 8*d.* (25*l.* 13*s.* 5*d.* last year); advertisements in "Year-book," 74*l.* 9*s.* (against 78*l.* 10*s.* last year); interest on deposit, 2*l.* 13*s.* 3*d.* (last year, 6*l.* 2*s.* 7*d.*). The expenses included: "Year-book" (printing, publishing, editor's remuneration, etc.), 548*l.* 10*s.* 4*d.* (481*l.* 12*s.* 9*d.* last year); secretarial expenses, 45*l.*; postages and petty cash sundries, 25*l.* 1*s.* 11*d.*; printing and stationery, 41*l.* 18*s.* 6*d.*; other expenses, 6*l.* 7*s.* 8*d.* The balance-sheet and the financial statements of the Bell and Hills Fund and the Research Fund were also presented.

Mr. D. Lloyd Howard, in commenting on the financial statement, referred to the heavy cost of printing and paper, and said the deficit on the year's working would have been greater had it not been for the action of the London Committee, who handed over the balance in hand after providing the entertainments at the last Conference. He appealed to the members to give larger subscriptions and to regard the Conference subscription as the minimum. The Year-book was of national importance, and one that was and should be indispensable to pharmacists.

Mr. T. Edward Lescher moved the adoption of the treasurer's statement, and said that now they had been able to resume the ordinary meetings, and with additional members, they might hope to carry on with a surplus, but it was necessary that the subscriptions should be increased if Conference was to pay its way.

Mr. J. H. Franklin formally seconded, and the financial statement was adopted.

Science Section.

The first paper, as follows, was then taken :

Some Recent Samples of "Grey" Cinchona Bark.

By Bernard F. Howard, F.I.C., and Oliver Chick, A.I.C.

Grey bark of Huanuco (a locality of Lower Peru) was a fairly common kind of Peruvian bark to be met with on the London market in the 'sixties and 'seventies, but owing to its low quinine content and the severe competition of rich Java barks its importation gradually diminished, and for the last twenty years, at any rate, it has been almost unknown as a bark of commerce. The temporary shortage of cinchona due to the war, however, has caused it to reappear, and the authors have had the opportunity of studying several samples of good-sized parcels from the point of view of modern analytical methods.

The literature of grey bark dates almost entirely from the period mentioned above—botanically. Weddell, in his "Notes on the Quinquinas," published in 1871, p. 39, states that *Cinchona nitida*, together with *C. peruviana* and *C. micrantha*, supplies the market with "quinquina gris" or grey bark, and it seems generally agreed among all experts that a normal sample of grey bark would be expected to contain these three varieties.

From the analytical point of view most of the published work, dating back some fifty years or more, is necessarily vague, owing probably to the fact that the methods of separation and estimation of the various alkaloids in the bark were at that time very uncertain. J. E. Howard stated (Pereira "Mat. Med.," vol. ii., pt. ii., p. 98, 4th ed.) that he found "nearly twice as much cinchonine as quinine," and Delondre and Bouchard found cinchonine in relation to quinine sulphate in the proportion of 4 to 1. From some old records of J. E. Howard's it would appear that on analysis a typical grey bark of that period would yield about 0.45 per cent. quinine sulphate and about 0.90 per cent. cinchonine alkaloid. A parcel of thirty-eight bales, marked $\frac{\text{D.F.C.}}{\text{E.}}$ *ex* s.s. *Cedric*, was analysed early this year, and the authors obtained the following results, which are fairly well in keeping with the references given above :

Quinine alkaloid ...	...	0.45 per cent.
Cinchonidine alkaloid	...	0.22 ,,
Cinchonine alkaloid	...	0.63 ,,
Quinidine alkaloid ...	...	*nil*
Amorphous alkaloid	...	0.48 ,,
Total alkaloid ...	...	1.78 ,,

The selling analysis quoted by the merchant showed quinine 0.42 per cent. and total alkaloid 1.49 per cent., which agrees fairly well with the authors' fuller separation of the alkaloids given above.

Another parcel of "Loxa" bark, recently analysed, apparently of the same type, contained quinine alkaloid 0.33 per cent. and cinchonine alkaloid 0.58 per cent.

These two recent parcels appear to conform to the old standards of typical grey bark and call for no special comment, but the following large parcel, the details of which are given below, is, in the authors' opinion, unique in the history of the cinchonaceæ.

In March 1920 we received from the same source a sample of a parcel of 138 bales of South American cinchona bark (marked D.F.C., *ex* s.s. *Elder Branch*), together with an analytical report that it contained 6 per cent. of alkaloids, but only minute traces of quinine. The sample was therefore submitted to a very thorough examination, with most surprising results, which fully bore out the analyst's statement above mentioned.

Quinine alkaloid	0.027 per cent.
Cinchonine alkaloid	5.490 ,,
Amorphous alkaloid	0.785 ,,
Total alkaloid	6.302 ,,

There were evidences of very small quantities of quinidine, but apparently no cinchonidine was present. In order to confirm the cinchonine value the separated alkaloid was examined by the optical test, and gave exactly the correct value for $(\alpha)\frac{15}{D}$.

The bark was then submitted to Mr. E. M. Holmes for his opinion, and was reported as grey bark of Huanuco. The bulk of the sample consisted of *Cinchona nitida* (Pereira, "Mat. Med.," vol. ii., part ii., p. 98, 4th ed.) and *Cinchona peruviana* (J. E. Howard), together with a small amount of *Cinchona officinalis*. As mentioned above, grey bark, as known on the market in the 'sixties and 'seventies, usually contained the first two varieties, together with *Cinchona micrantha*, which was absent in the sample under examination. There would seem to have been some doubt in the past as to whether or not the *Peruviana* of J. E. Howard was identical with *Cinchona nitida* of Ruiz and Planchon, and in order possibly to throw some light on this point the first two varieties, as sorted out of the bulk samples by Mr. Holmes, were again examined analytically.

	Cinchona nitida.	*Cinchona peruviana.*
Quinine alkaloid ...	0.20 per cent.	0.28 per cent.
Cinchonidine alkaloid ...		
Cinchonine alkaloid ..	5.08 ,,	5.04 ,,
Quinidine alkaloid ...	trace	trace
Amorphous alkaloid ...	0.82 ,,	1.28 ,,
Total alkaloid ...	6.10 ,,	6.60 ,,

The average of two tests (6.35 per cent.) confirms the first result of the samples as a whole (6.302 per cent.). The cinchonine was again checked by optical test, and gave a specific rotation of 208° and 212° respectively, which is sufficiently close to Allen's figure of 226° for identification purposes. From the analytical point of view, therefore, the alkaloidal content of the *Peruviana* was practically identical with that of the *Nitida*.

It therefore remained to compare the two barks microscopically, and Mr. Holmes kindly undertook to have this examination carried out. The authors feel that they cannot do better than give this report in full.

The microscopic examination of the bark indicates that it is in all probability a form of *Cinchona peruviana* (Howard), remarkably rich in cinchonine, bearing somewhat the same relation to that species that *Cinchona ledgeriana* does to *Cinchona Calisaya* (Wedd.).

The bark from which the sample was taken is evidently the bark recognised in commerce as Huanuco, or Lima, bark. This bark is stated by Pereira to be collected in Cuchero and Huanuco and exported from the Peruvian port of Lima (Callao). In his time, about 1857, two distinct barks were found to be mixed under this name; one referred to *Cinchona nitida* (R. and P.) and the other to *C. micrantha* (Wedd.), the *C. nitida* being distinguished as "fine grey bark" and the *C. micrantha* as "inferior or coarse grey bark" (Pereira, "Mat. Med.," 4th ed., 1857, vol. ii., part ii., pp. 98, 99); but both of these barks were then imperfectly known. But the various species sent into commerce under the name of grey, or Huanuco, bark appear to have changed in course of time, for Vogl ("Pharmacognosie," p. 286) states that Huanuco bark was then (1896) derived from *C. macrocalyx*, mixed with a large proportion of the barks of *C. ovata* and *C. peruviana*, but rarely with that of *C. micrantha*.

Planchon ("Drogues Simples," vol. ii., p. 124, 1896) states that the Huanuco bark was usually derived from three distinct species—viz., *Cinchona nitida* (R. and P.), *C. micrantha* (R. and P.), and *C. peruviana* (How.), the first-named being then very rare and *C. peruviana* constituting the principal portion of Huanuco bark. Fortunately, he gave two illustrations of the microscopic structure of *C. nitida* and *C. peruviana* (How.), that of *C. nitida* agreeing fairly well with the illustration of that bark in Berg's "Anatomischor Atlas" (published in 1865, tef. 34, No. 80), where an illustration of *C. micrantha* is also given on the same page (No. 82). Berg, however, expressly states that the *C. nitida* he illustrates is not that described by J. E. Howard, but is the *C. nitida* of Ruiz and Pavon (the *Cascarilla peruviana* of Pavon). Like that of Planchon, the illustration indicates the absence of laticiferous vessels and stone cells in the cortical parenchyma, while they are abundantly present in Planchon's *C. peruviana*. This species, however, is not given in Berg's atlas. These two features are also absent from the illustration of *C. micrantha* given by Berg.

The specimen of Huanuco bark recently received from B. F. Howard is seen under the microscope to consist chiefly of bark belonging to the group in which laticiferous cells and sclerenchymatous cells are distributed through the cortical parenchymi. This group includes *Cinchona ovata*, *C. pelleteriana*, *C. peruviana*, *C. purpurea*, and *C. umbellulifera*. The bark in question must therefore belong to one of these species, or to an undescribed species belonging to the same group.

Of those cinchonas to which Huanuco bark has been attributed by different authorities, *C. micrantha* and *C. nitida* are excluded by reason of containing neither laticiferous vessels nor sclerenchymatous cells in the cortical parenchyma, also *C. macrocalyx*, because, although it shows sclerenchymatous cells, it has no laticiferous vessels. The choice of known species rests therefore between those of the group just mentioned. Of these *C. umbellulifera* is characterised by having very few sclerenchymatous cells and a resinous zone under the periderm, and very small bast cells, somewhat regularly, but radially, arranged in narrow lines, and the cells of the medullary rays are represented as broader than long. According to Berg, this species is found abundantly in Huanuco bark. In *C. ovata* the cork consists of colourless, not brown cells. This bark may be therefore left out of consideration, as in Mr. B. F. Howard's bark they are dark brown. *C. pelleteriana* has liber cells varying much in diameter and also shows club-shaped liber cells in the bark, and it is not known to occur in Huanuco bark. *C. purpurea* has also a pale cork like *C. ovata*. Like *C. pelleteriana*, it contains club-shaped liber cells. It is sometimes found in Huanuco bark, but the pale cork distinguishes it from the bark under consideration. *C. peruviana* is not described by Berg, but is described by Vogl. l c., pp. 287, 288, and also by Planchon, who gives an illustration of it (1 c., p. 125). It is characterised by Vogl as having numerous club-shaped liber cells and crystal cells and the laticiferous vessels often filled with thyllæ. The laticiferous vessels form a single or double ring. The external appearance of this bark is described by Vogl as of a prevailing grey-brown colour with yellowish, greenish, and whitish patches, with distant transverse cracks and well-marked long fissures, and is of a cinnamon-brown colour on the inner surface.

Planchon and Collin, 1 c., p. 124, states that the small quills of *C. peruviana* have a finely cracked periderm of a grey or slightly bluish tint, and closely adherent to the liber, the transverse cracks being few and shallow. The larger quills always present a more or less dark grey tint, and are characterised by the presence of white patches and longitudinal depressions, which are more or less clearly marked. The transverse cracks often extend nearly round the large quills. The microscope shows a thick layer of cork cells, isolated sclerenchymatous cells

in the cortical parenchyma, and the liber fibres are mostly isolated and arranged in radial lines.

The specimens received from Mr. B. F. Howard consist mainly of pieces of bark exhibiting the characters attributed to *C. peruviana* (How.) by Planchon and Collin, and show the anatomical structure of that bark as illustrated and described by those authors and also as described by Vogl. Some of the pieces differ in the greater number of sand cells and in the smaller number of the stone cells in the cortical parenchyma. The larger percentage of cinchonine found in this shipment of Huanuco bark may possibly be due to the elevation at which the trees grow, as this factor and the accompanying differences of heat and moisture are known to influence the character of the alkaloids present. In the present state of our knowledge of the species of the cinchona genus occurring in Peru, I can only come to the conclusion that the bark submitted to me for examination is the produce of one or possibly more forms of *C. peruviana* (How.), as interpreted in the illustration given by Planchon and Collin and Berg.

The authors were at a loss to understand the presence of *Cinchona officinalis* in a grey bark, and they also considered that if this variety was present in any quantity it would inevitably affect the alkaloidal contents. As has been shown above, *Nitida, Peruviana,* and *Micrantha* have always appeared to yield an exceptionally large amount of cinchonine, but this peculiarity has never been known to occur in the much less rare *Officinalis* bark.

In order to establish the presence or otherwise of *Officinalis* in this parcel, a fresh sample was drawn from the bulk, and again submitted to Mr. Holmes for his opinion. In this fresh sample he could find no *C. officinalis*, but classified it into three varieties—*Nitida, Peruviana, Micrantha*—together with another variety somewhat resembling *Pitayensis*, and which might either belong to this or the *Lucumæfolia* variety, or might possibly be a new variety altogether. From this examination it is fair to assume that the presence of a small quantity of *Officinalis* in the first sample was purely accidental and not typical of the parcel, and that the amount was so small that it did not affect the unusual distribution of alkaloids.

The analyses of the varieties, as identified by Mr. Holmes, were as follows :

	C. micrantha, per cent.	*C. nitida*, per cent.	*C. peruviana*, per cent.
Quinine alkaloid ... } Cinchonidine alkaloid ...	0.08	0.05	0.11
Cinchonine alkaloid ...	4.49	5.64	5.12
Quinidine alkaloid ...	trace	trace	trace
Amorphous alkaloid ...	0.33	0.30	0.50
Total alkaloid ...	4.90	5.99	5.73

The amount of the obscure variety resembling *Pitayensis* was not sufficiently large to warrant a separate analysis, and it was considered important to preserve it intact as a specimen for future reference.

Mr. Holmes has expressed the opinion, with regard to this exceptional parcel of grey bark, that the abnormally high proportion of cinchonine indicates growth at a low elevation and a hot moist atmosphere, basing his assumption on a statement by J. E. Howard ("Pharm. Journal," 1883, xiii., p. 1013), that under these circumstances cinchonine is increased and quinine decreased.

Mr. Holmes also compares the contents of this sample with the well-known *Ledgeriana* variety of *Cinchona Calisaya*, in which quinine alone is present up to a high percentage (the present authors have analysed samples of this bark containing up to 12 per cent. of quinine expressed as sulphate) and the other alkaloids only in very small proportions; he also puts forward the extremely interesting supposition that if, under peculiar circumstances of cultivation, a variety of *Calisaya* bark can be produced with such a large proportion of quinine, so in the case of *Cinchona peruviana* or *C. Nitida*, it is equally possible that under favourable conditions a variety should be found in which the high cinchonine value peculiar to this species is exaggerated almost to the point of extinction of the other alkaloids. If this most interesting supposition is accepted it goes far to account for the peculiar contents of the samples under discussion which at first sight seems almost inexplicable.

For many years past the commercial value of bark for manufacturing purposes (as distinct from druggists' bark) has been based almost entirely on the percentage of quinine present, but quite recently the great stimulation of interest in the hydrogenated derivations of the various natural alkaloids has caused the distribution of the other principal bases, such as cinchonidine, cinchonine, and quinidine in the bark, to be a matter of some importance, and consequently any information regarding the conditions under which Nature herself tends to "separate" particular alkaloids in various species of cinchona may be of considerable commercial value in the future, and not merely a question of academic interest.

Discussion.

The President invited discussion, remarking that this was a valuable paper.

Captain H. Finnemore suggested that the paper might prove to be a test case of the activities of the Conference, and that the subject might be followed up. It might be possible to secure suitable conditions for cultivation of the species in India.

The authors and Mr. Holmes were thanked for their contribution, on the motion of the President.

The next paper was :

Cresineol* : a Compound of Cineol and Orthocresol.

By T. Tusting Cocking, F.I.C.

[abstract.]

Cineol occurs in a large number of volatile oils, and is the predominating constituent of the oils of cajuput and of wormseed, and also of many varieties of eucalyptus. It can also be produced synthetically by distilling terpene hydrate with dilute sulphuric acid. Cineol possesses the property of combining with hydrobromic, hydrochloric, phosphoric, and arsenic acid, and also with many phenolic bodies, such as phenol, naphthol, cresol, resorcin, pyrocatechin, hydroquinone, guaiacol, methyl salicylate and thymol. The author found that when eucalyptus oil was mixed with a particular sample of commercial cresylic acid and allowed to stand in a cold place, a number of large transparent crystals was formed, which on investigation were found to consist of cineol and cresol, with a melting-point of about 50° C.

This experiment was repeated with a number of other samples of cresylic acid, and also with cresol B.P., but failed to yield any crystals. Eucalyptus oil was then mixed separately with ortho-, meta- and para-cresols, and in the case of the eucalyptus oil and ortho-cresol mixture a crystalline mass was almost instantly formed, considerable heat being generated by the reaction. The addition of eucalyptus oil to meta- and para-cresol was accompanied by the production of heat, but no crystals were formed, even on cooling to 10° C.

In order to investigate this compound the author prepared pure cineol and pure ortho-cresol. Molecular quantities of these two substances were then mixed, the cineol being at ordinary temperature and the ortho-cresol at about 50° C. Considerable heat was evolved, and on cooling the clear liquid a mass of glistening white crystals was formed. This compound, to which the author has given the name "cresineol," has a sharply defined melting-point of 55.2° C., its specific gravity is 0.9661, and it has a refractive index of 1.4846. It is readily soluble in ether, alcohol, chloroform, benzene and organic solvents generally. It has a pleasant camphoraceous odour. Cresineol is decomposed by aqueous alkali, the cineol being regenerated; and mixed with an equal weight of camphor it forms a colourless liquid, which on cooling forms a solid white crystalline mass, that becomes liquid and clear at 15° C. Cresineol appears to have no caustic action on the skin, even in the melted state.

These experiments were carried out by the author in the laboratories of The British Drug Houses, Ltd.

* The name "Cresineol" has been registered as a trademark by The British Drug Houses, Ltd.

DISCUSSION.

Mr. A. W. GERRARD congratulated Mr. Cocking on his paper, which, he said, justified the value of the work the Conference was doing. He did not hear any reference as to what might be the value of this product so far as its uses were concerned pharmaceutically, surgically or medicinally, but he thought it had probably something antiseptic in it which would have a germicidal value, and they might look forward to it as being of great use.

Captain H. FINNEMORE asked whether this compound was decomposed by water.

Mr. CARR, replying to the discussion, said that the bactericidal value of cresineol was under investigation. It was obvious that it may have several clinical uses—*e.g.*, as an intestinal antiseptic and as a dusting-powder—it being practically non-toxic. It is slowly decomposed by weak caustic alkalis, and to a slight extent by water.

A New Method for the Estimation of Cineol in Eucalyptus Oils.

By T. TUSTING COCKING, F.I.C.

[ABSTRACT.]

THE formation of "cresineol," the molecular additive compound of cineol and ortho-cresol, may be used for the determination of cineol in eucalyptus oil by the cryoscopic method elaborated by the author. The new process consists of mixing 3 grams of the eucalyptus oil previously dried over calcium chloride with 2.1 grams of ortho-cresol and the freezing-point noted of the mixture. A comparison of this cryoscopic method with the phosphoric-acid test described in the B.P. yielded the following results :

	Cresineol Method		B.P. Method
	Freezing Point	Cineol Curve "C"	Cineol
(1) Eucalyptus oil	49.8°	86.4 per cent.	82 per cent.
(2) ,,	50.4°	87.7 ,,	85 ,,
(3) ,,	50.2°	87.0 ,,	84 ,,
(4) ,,	48.4°	83.3 ,,	79.5 ,,
(5) Cajuput oil ...	36.0°	60.5 ,,	50 ,,

By the freezing-point method now suggested the results were respectively (1) 4.4, (2) 2.7, (3) 3.0, (4) 3.8, (5) 10.5 per cent. higher than those given by the official B.P. process. The enormous difference (10.5 per cent.) recorded for No. 5 (oil of cajuput) was confirmed by a repetition of the analyses. The results obtained by the freezing-point method were identical, but by the phosphoric-acid method the figures found were respectively 49 and 51 per cent. The accuracy of the value found by the freezing-point method was checked by mixing the oil of cajuput with an equal weight of pure cineol and determining the freezing-point of this mixture after addition of ortho-cresol. The figure 49.9° C., corresponding to 80.0 per cent. of cineol (curve "C"), was obtained. This, when corrected for the added cineol, gave exactly 60 per cent.

The cresineol method is thus shown to give results which are higher than those given by the phosphoric-acid method. The maximum error is 3 per cent., and this error decreases as the percentage of cineol increases; its accuracy is thus greater than that of other published processes. It is the only method by which the purity of commercial cineol itself can be determined. It is simple and expeditious; an estimation can be carried out in a few minutes, and can be performed in a very small quantity of oil.

The work entailed by the above research was carried out by the author in the laboratories of The British Drug Houses, Ltd.

There was no discussion.

MR. RUTHERFORD HILL INTERVENES.

On the PRESIDENT announcing that the Science and Practice Sections would hold sittings in the afternoon, Mr. J. RUTHERFORD HILL pointed out that many members were interested in the proceedings of both sections.

The PRESIDENT : You are asking how we can be in two places at once. (Laughter.)

Mr. J. RUTHERFORD HILL protested that the arrangement was inconvenient.

Tuesday Afternoon's Proceedings.

Science Section.

The President took the chair just after 2.30, and was supported on the platform by Mr. W. A. H. Naylor and Mr. C. H. Hampshire.

In the absence of the author of the first paper, an abstract was read by Mr. HAMPSHIRE.

Standardisation of Tincture of Strophanthus.

By C. T. BENNETT, B.Sc., F.I.C., F.C.S., Pharmaceutical Chemist.

[ABSTRACT.]

THE author drew attention to the fact that the standards adopted for the physiological assay of tincture of strophanthus differ considerably, and, in view of these variations, advocates the establishment of an international standard for physiological standardisation. He then proceeded to examine a number of questions arising from this position, the first query being whether strophanthus was of sufficient importance to the medical profession to warrant a thorough examination of the glucosides found in the various species. In view of the impossibility of obtaining Kombé seeds, unmixed, in sufficient amount to meet the demand, which variety would be the best substitute? Arising out of this question, it is necessary to consider the practicability of collecting the most suitable variety under the supervision of a competent botanist. The possibility of substituting strophanthin, or a preparation of the latter, for the official tincture might be considered. This glucoside is at present official in the French and United States Pharmacopœias. In this case it would be necessary definitely to describe the characters of the official glucoside, in order to ensure the purity of the product and a uniform medicinal action. This is of special importance, since the chemical and physical characters of the various glucosides found in the different species of strophanthus are not sufficiently known to enable a definite standard to be fixed.

If physiological standardisation is adopted, the best method of procedure would have to be considered, and in this case the author suggests co-operation between the respective revision committees of the British and United States Pharmacopœias, although he is personally in favour of chemical assay, and as a standard advocates that the seeds should be required to contain 6 to 8 per cent. of strophanthin, and the tincture 0.6 per cent. of this glucoside.

DISCUSSION.

Mr. J. COFMAN-NICORESTI referred to the time-limit of one hour allowed by the United States Pharmacopœia for killing a frog, and remarked that some frogs might take two or three hours to die.

The PRESIDENT pointed out that there were two factors involved in the toxic test—a time factor and a dosage factor.

Mr. COFMAN-NICORESTI thought that twenty-four frogs would be needed in order to get an accurate result.

The PRESIDENT inquired whether the age of the frog was usually taken into consideration.

Mr. A. W. GERRARD referred to a correspondence that he had had with the late Professor Fraser, whose classic experiments with strophanthus are well known. He (the speaker) prepared some of the glucosides, but was not satisfied with them. He suggested that the active content of strophanthus should be estimated as a glucoside.

Mr. F. H. CARR pointed out that the standard adopted for strophanthus was infinitely lower than that employed for digitalis. They were too far apart in the matter of physiological activity. His experience was that when

made with Kombé seeds, the tincture showed practically no variation. Clinical practice could incline to a greater use of strophanthus. A better method of growing and keeping digitalis leaves was desirable : it was very difficult to get a tincture which will keep. Research was greatly needed. If digitalis leaves were dried rapidly by a current of air they were certain to be active; but if allowed to stay in the slightest moisture they rapidly fell off in activity.

Mr. H. Deane suggested that results obtained with a frog were not necessarily comparable with those to be expected in the human organism. Ten times the maximum dose of digitalis tincture were dangerous, but large doses of strophanthus tincture were safe.

Captain Finnemore remarked that strophanthus was almost a perennial question, and one within the province of the Research Committee.

Mr. J. Grier reminded the meeting that a considerable amount of work on strophanthus had been done in the pharmaceutical department of Manchester University. They had not been able, there, to get a No. 30 powder without defatting the seeds. He believed, speaking from memory, that the U.S.P. required a still finer powder. In order to exhaust, they adopted at Manchester a very slow rate of percolation—about ten drops to the minute. They were unable to exhaust the seeds with the amount of alcohol ordered in the British Pharmacopœia. Barclay's method of estimation would be a useful addition to the B.P.

Mr. F. W. Gamble doubted whether a physiological standard was satisfactory. Personal absorption must be allowed to possess a certain amount of importance. The more we knew of physiological standardisation, the more we came to rely on chemical assay.

Mr. Naylor said that, without undervaluing pharmacological tests, we must not think that they are the last word ' Either the varying strophanthins are isomeric or they are not strophanthins. There should be no essential difficulty in devising a chemical method of assay.

Dr. Symes, speaking as one who had suffered from the changes of strength in tincture of strophanthus in various British Pharmacopœias—(a laugh)—wanted to know whether as much as fifteen minims of the tincture may be given.

Mr. E. W. Mann, who briefly referred to his laboratory work on this subject in Birmingham, said that it was essentially a case for "team work."

Mr. Holmes referred to the great difficulty in distinguishing strophanthus seeds by their outward appearance. Anything from 20 to 80 per cent. of a sample might be genuine. It might be worth while to get Colonial Governments to take up the cultivation. Even some of the seeds used by Professor Fraser turned out to be a mixture; and, until strophanthus seeds can be obtained unmixed, it is extremely difficult to test their composition satisfactorily. The same difficulty had arisen in the case of *Aconitum napellus*.

Mr. J. Grier thought that the clinical test was the ultimate one. In one of Merck's pre-war catalogues something like a dozen different active principles of digitalis were held out, whereas, in fact, only two had really been isolated. A patient had been known to take gr. iv. of powdered digitalis three times a day for six years. She ought to have died, but did not. (Laughter.)

The author was thanked for his paper.

The following paper was taken next :

The Determination of Lead in Chemicals in Acid Solution.

By Norman Evers, B.Sc., F.I.C.

[abstract.]

The method adopted by the British Pharmacopœia, 1914, is a colorimetric one, depending on the matching of the colour of lead sulphide in alkaline solution against a standard. In the majority of cases this method works well, but there are certain exceptions in which it is far from satisfactory, viz :

(i.) *Where Much Iron is Present.*—The addition of 1 c.c. of 10 per cent. potassium cyanide solution is sufficient to keep copper in solution, but if more than a trace of iron is present it is not enough.

(ii.) *Calcium and Magnesium Salts.*—Precipitation or turbidity is very liable to occur in testing these salts, and when potassium cyanide is added to a solution of a calcium or magnesium salt a precipitate is formed if the solution is sufficiently alkaline. It was found by experiment that if the hydrogen ion concentration was greater than $p_H = 8.5$,* *i.e.*, if the solution is acid to phenolphthalein, no precipitate is formed in the case of calcium salts. With magnesium salts the solution must be strongly alkaline to phenolphthalein to produce a precipitate. Therefore it is, to say the least, risky to determine lead in a solution which is so liable to precipitation, in face of the well-known property of precipitates of absorbing lead in alkaline solution. Under the B.P. conditions, therefore, there is a comparatively small range of hydrogen ion concentration over which the test is workable with calcium salts, viz., $p_H = 6.0$ to 8.5, and without troublesome measurements it would not be possible to ensure that the solutions were within this range.

(iii.) *Calcium Phosphate.*—In this case it is impossible to determine lead in alkaline solution at all.

(iv.) *Phosphoric and Glycerophosphoric Acids.*—These frequently contain much iron and traces of calcium and cause trouble in the B.P. test on account of turbidity or colorations.

It was found that by the addition of more potassium cyanide solution it was possible to determine lead in the presence of copper in solutions of much greater acidity than $p_H = 6.0$, and therefore attention was directed to the possibility of determining lead in acid solution in order to get rid of the difficulties mentioned above.

The difficulty of determining lead colorimetrically as sulphide in acid solution is that unless the two solutions to be compared are of the same hydrogen ion concentration the colours produced are not comparable. A means was therefore sought of bringing the solutions to the same hydrogen ion concentration without elaborate measurements. After several trials the indicator known as bromo-phenol-blue was selected for the purpose. This indicator (tetra-bromo-phenol-sulphone-phthalein) is blue in alkaline and yellow in acid solutions, but, what is most important, it is colourless at its neutral point. The colour change takes place over a range of hydrogen ion concentration of $p_H = 3.0$ to 4.6, which is distinctly acid. If, therefore, the indicator is added to the solution in which lead is to be determined, and brought to the colourless neutral point by the addition of alkali or acid, we obtain a colourless solution of known hydrogen ion concentration (p_H = about 3.8), in which, by the addition of hydrogen sulphide solution, the lead colour can be safely matched against a control prepared in the same way. Iron gives no colour with hydrogen sulphide under these conditions, but copper comes down equally with lead. By the addition of sufficient potassium cyanide (15 c.c. of 10 per cent. solution) copper may be prevented from giving a colour, but if iron is also present in any quantity complications arise through the formation of ferrocyanides. Where iron and copper are both present, therefore, it is preferable to remove the copper by adding a solution of alum followed by ammonia. This gives a precipitate of aluminium hydroxide, which carries down all the lead, leaving the copper in solution. The precipitate is washed, redissolved in acid, and the test carried out without the addition of cyanide.

The method of carrying out the test is as follows :

(i.) *Where Lead alone or Lead and Iron are Present.*—The usual weight of the chemical is dissolved in about 30 c.c of water, or just sufficient dilute hydrochloric acid. Two drops of a solution of bromo-phenol blue are added and $N/2$ alkali or $N/2$HCl is run in from a burette until a colourless solution is obtained. The

* p_H is the logarithm of the reciprocal of the concentration of the hydrogen ions. Thus when $p_H = 6.0$ it means that the concentration of hydrogen ions is $N/10^6$ or $N \times 10^{-6}$. The lower the value of p_H the higher is the hydrogen ion concentration and the greater the acidity of the solution.

adjustment is more exact by using $N/10$ acid or alkali at the end. Three c.c. of saturated hydrogen sulphide solution is then added, and the colour matched against a control prepared in the same way, adding the dilute lead solution before adjusting the acidity. The dilute lead solution must be brought to the same hydrogen ion concentration before use as follows: 5 c.c. of the strong lead solution (1 c.c. = .001 gram Pb) is diluted to about 450 c.c. in a 500 c.c. graduated flask, 5 drops bromo-phenol-blue solution are then added and $N/2$ alkali run in until the colourless point is reached. The solution is then made up to 500 c.c.

(ii.) *Where Lead and Copper and not more than a Trace of Iron are Present.*—15 c.c. of 10 per cent. potassium-cyanide solution is added before bringing to the neutral point.

(iii.) *Where Lead and Copper are Present and Iron is in Fair Quantity.*—To the solution of the chemical in water or dilute hydrochloric acid add an excess of ammonia followed by a solution of alum until a permanent precipitate is formed. Filter and wash until the filtrate gives no colour with sodium-sulphide solution.

Dissolve the precipitate in 5 c.c. of dilute hydrochloric acid, wash with water, add excess of ammonia and alum solution to the filtrate, and repeat the washing. Dissolve the precipitate in 5 c.c. dilute hydrochloric acid, wash the filter-paper, and treat the solution as in (i.). It is, of course, essential that all reagents should be free from lead.

Calcium Phosphate.—In the case of calcium phosphate this method is not applicable. Calcium phosphate is not soluble at a hydrogen ion concentration of $p_H = 3.8$ as used above, and therefore a greater degree of acidity must be used, and the indicator is useless.

The test given in the B.P., 1914, is as follows: "Its solution in slight excess of diluted hydrochloric acid is not affected by hydrogen sulphide (absence of copper and lead)." Whether any colour is obtained or not is dependent on the interpretation placed upon the expression "a slight excess." No attempt is made to distinguish between copper and lead, and the test, if not carried out under more exactly defined conditions, is useless. Calcium phosphate is very liable to contain iron and copper; and at the hydrogen ion concentration at which the test must be carried out copper cannot be kept up by potassium cyanide. The copper must therefore be removed as follows: 1 gram of the calcium phosphate is dissolved in sufficient dilute hydrochloric acid, and excess of ammonia added. The precipitate is filtered, washed with water until the filtrate gives no colour with sodium sulphide, and dissolved in dilute hydrochloric acid. This process is then repeated. The solution is treated with dilute alkali until a slight permanent precipitate is formed. $N/2HCl$ is then run in until the latter just redissolves; 3 c.c. hydrogen-sulphide solution is then added, and the colour matched against a control prepared in the same way.

The above methods have been tested on known amounts of lead both alone and in different chemicals with satisfactory results.

There is a slight loss of lead in the alumina precipitation method—*e.g.*, 10 c.c. of dilute lead solution was added to 5 grams of calcium carbonate containing much copper and iron. The final colour obtained was matched by 9 c.c. dilute lead solution. The experimental work for this paper was carried out in the analytical and research laboratories of Allen & Hanburys, Ltd.

Discussion.

Mr. T. Maltby Clague said it was a real revelation to them that the bottles in which they kept their liquor ammonii acetatis were nearly all of them capable of yielding to the stuff they kept in them. On going round his own bottles he found that four out of five gave him a good precipitation of lead, and he had abandoned that type of bottle for that particular purpose. He suggested that the Pharmacopœia tests for the purpose for which the paper had been read should be inclusive of some recommendation for the use of chemical common sense.

Mr. J. Grier pointed out that bottles which it was desired to use in a clean condition should be rinsed out with dilute nitric acid.

The President, in summing up the discussion, said that when going beyond the stringent conditions of the Pharmacopœia it should be remembered that no reagent was likely to be lead-free; consequently, one was continually adding lead, and ultimately lead came into one's test in appreciable quantities.

The next paper was on

Mercuric Oxycyanide.

By A. J. Jones, Ph.C.

[abstract.]

Mercuric oxycyanide is rather an interesting salt both chemically and pharmaceutically, and the reactions involved in its composition and decomposition open up a number of problems. The commercial salt is of variable composition, and the question was raised why the pure salt, as described in the works of reference, was practically never supplied. On approaching manufacturers on this point, three types of explanation were received: (1) That the pure salt could not be produced when following the B.P.C. formula; (2) that the pure salt could be produced, with no reason for the contrary; (3) that the pure salt was an undesirable substance, being dangerous to handle, and that a mixed cyanide and oxycyanide was the generally recognised preparation. It was the latter explanation that gave the matter its interest.

Several assays of commercial samples yielded a residue consisting invariably of exactly equimolecular proportions of $HgCy_2.HgO$, the excess cyanide remaining in the mother liquor on recrystallisation.

To obtain a pure salt, the author adopted the following procedure:

Forty grams of mercuric cyanide and 30 grams of yellow mercuric oxide are mixed in a mortar and then ground into a perfectly smooth cream with 15 c.c. of water. The trituration is continued. Reaction is observed by the mixture gradually becoming paler, and after about a quarter of an hour's stirring it will have thickened considerably, being almost jelly-like. At this stage add 0.5 c.c. of 20 per cent. solution of caustic soda, and continue the trituration. The colour will rapidly change and the whole stiffen. Water is added from time to time, so as to keep the mixture workable, and the result is finally an almost perfectly white paste. Set aside over-night. Dilute with 200 c.c. of water, and render acid to phenolphthalein by the addition of a few drops of acetic acid. Now transfer to a flask containing about 700 c.c. of boiling water with 20 grams of $HgCy_2$ in solution. Continue the heat, with stirring, until solution is complete and a little undissolved matter coagulated; then filter rapidly and set aside to crystallise. The mother liquor can be utilised again. The salt is finally collected on a filter, washed with a little cold water, pressed, and then dried over sulphuric acid or in a current of warm air.

Decomposition during Preparation.

Richard states that the salt is very unstable and decomposes at 80° C., so that it cannot be recrystallised from boiling water. This statement, however, hardly gives the complete case. The pure salt may be boiled with water without decomposition if the solution is moderately dilute—as, say, 1 to 25—and even at a concentration which is near saturation at boiling-point.

But if the mixture of water and oxycyanide at the higher concentrations be heated in a flask over a gauze and Bunsen flame, it is the undissolved crystals that will soon decompose; this apparently disturbs the equilibrium, and a very large quantity of oxide makes its appearance. The solution then seems to arrive at a stable condition, and further boiling, concentration, or addition of oxide has very little effect upon it. This was brought out when failing in some attempts to recrystallise the pure salt.

But the point to observe is that the salt seems to break down, either until an approximately definite ratio exists

between the HgO and $HgCy_2$ in solution, or until a certain concentration of the cyanide is obtained, without special regard to the oxycyanide present; the observations made are too few, and, taken at too nearly the same concentrations, do more than point at both possibilities.

Decomposition and Danger.

The fact of explosive decomposition on heating is mentioned in Watts's Dictionary, "Hager," and some other German works, but no figures or other particulars are given in the references that were available for these notes. Some experiments were made in the direction of following the course of the decomposition, and the results obtained are now given; they are unsatisfactory in the sense that they offer no conclusion, but they are interesting so far as they go.

One sample ("A") contained 26.83 per cent. of the normal cyanide. Taking about 1 mm. deep in a 3 to 4 mm. tube, and treating as a melting-point determination, it changed to a grey (hyd. c. creta) at from 160° to 170°, and then gradually darkened, becoming jet black and exploding at 188°; sample "B," with 33.3 per cent. normal cyanide, behaved similarly and exploded at 200°; while a specially prepared sample containing no free cyanide, and assaying exactly $HgO.HgCy_2$, darkened between 155° and 160°, and exploded at 190°.

Following this, 1 gram from each sample, "A," "B," and "C," was separately taken in a 100-c.c. CO_2 flask, which was either plugged with cotton-wool or covered with a watch-glass, and then half submerged in a bath of sulphuric acid and gradually heated. Again the colour changed at from 160° to 170°, becoming jet black at 200°, but without exploding; and, after remaining at from 200° to 220° for two hours, the whole finally became almost quite white, with a good sublimate of metallic mercury. When a "pure" commercial sample was similarly treated, however, it changed colour at 160° and exploded at 180°, leaving a greyish-black residue. From this it would seem that oxycyanide itself begins to decompose at about 160° C., but that the presence of normal cyanide retards the velocity of the reaction. The pure salt exploded quite quietly, and the covering watch-glass merely lifted. There was a slight but trifling loss through "blowing."

A series of experiments were undertaken with a view to elucidate the course and the cause of the reaction in question, and the results suggest that the reaction is not a simple one, and that it seems to be progressive through more than one stage.

With regard to the fact that explosions have occurred during the process of manufacture, it is possible that the method adopted may have some bearing on the question, particularly if pure oxide and cyanide are not employed, and the process is carried through a series of reactions starting from another mercuric salt, and then with alkali-cyanide. In this case it is conceivable that traces of compounds might be formed, which would be of a dangerous nature in themselves, and might pass into the finished preparation in sufficient amount to initiate the decomposition of the oxycyanide under some conditions.

From private information received by the author it appears that some makers control their product so as to contain respectively 40 and 50 per cent. of oxycyanide, the remainder being cyanide. It would be desirable to determine whether mercuric oxycyanide has any distinctive medicinal or bactericidal properties, and if it has and is required by the medical profession, then the pure salt should be prepared, taking all precautions as for a dangerous chemical. If it has no such distinction, then it would be far better to delete it from among the range of recognised therapeutic agents. However, since it is well recognised and authoritatively described, the proper course would be to supply the pure salt.

Discussion.

In reply to a remark by Mr. Nutter-Smith, who described the salt as not very soluble in water, Mr. Jones said that a certain admixture of cyanide does not affect the solubility very much.

Mr. Jensen prefaced the reading of the next paper by remarking that it was merely a preliminary canter in what was intended to be systematic investigation, but there were points which others might like to follow up, and he did not propose to pursue the investigation at the present time.

Progress of Decomposition.

—	Preservatives present	Original strength	Strength after 8 days, 30°-35°	Loss	Strength after further 12 weeks at 25°-30°	Total loss	Total loss 4 years later
1. Peraquin ...	Acetanilid, 0·002% Phosphoric acid, 0·1%	10·4 vols.	10·1 vols.	2·9%	8·9 vols.	14·5%	85·5%
2. Perhydrol ...	Acetanilid, 0·002% Phosphoric acid, 0·1%	10·0 vols.	9·8 vols.	2·0%	9·5 vols.	5·0%	81%
3. Commercial Peroxide (solids 0·3%)	Phosphoric acid, 0·05% Hydrochloric acid, 0·025% Boric acid, 0·01%	12·8 vols.	12·6 vols.	1·7%	9·4 vols.	27·0%	73·5%
4. An American medicinal brand	Acetanilid, 0·002% Hydrochloric acid, 0·02%	10·1 vols.	10·0 vols.	1·0%	9·8 vols.	2·9%	—
5. An English medicinal brand (solids 0·08%)	Acetanilid, 0·008% Hydrochloric acid, 0·05%	9·0 vols.	8·9 vols.	1·1%	3·5 vols.	61·1%	99%
6. Ditto Ditto	Urea, 0·02% Hydrochloric acid, 0·05%	10·7 vols.	10·4 vols.	2·8%	4·0 vols.	62·8%	97%
7. Ditto Ditto	Hexamethylene T..0·05% Hydrochloric acid, 0·05%	10·7 vols.	10·5 vols.	1·9%	7·8 vols.	27·2%	77·5%

Note on the Preservation of Hydrogen Peroxide.

By H. R. Jensen, M.Sc., A.I.C.

[abstract.]

The author presented the results of a preliminary investigation undertaken a few years ago with a 10-volume solution of hydrogen peroxide, in order to ascertain the comparative value of certain preservatives, and particularly their efficiency under the conditions of storage met with in warm climates. The various samples were kept in 8-oz. amber-coloured bottles, the stoppers being removed and well-paraffined corks tied down being substituted. In order to reduce chemical effects from the action of the glass on the contents the bottles were first subjected to steam injection, and finally digested in boiling water for several hours. In the accompanying table the results are given.

The author concludes that a high degree of purity favours stability, in which case the simplest preservatives in minute quantities suffice, as is apparent from the behaviour of samples 1, 2, and 4. The other figures show that the nature rather than the amount of impurity (solids, etc.) present determines the rate of decomposition. With

regard to the figures shown in the last column—four years later—it must be remembered that the conditions of storage, such as laboratory temperature and untied corks, introduced evaporation and other uncertain factors.

DISCUSSION.

Mr. GRIER remarked that a trace of copper in presence of ammonia would decompose hydrogen peroxide.

In reply to a question, Mr. JENSEN said that the actual cause of the fourth sample keeping so well was obscure.

The next paper was

The Determination of Free Acetic Acid in Acetyl-salicylic Acid (Aspirin).

By A. NUTTER-SMITH, PH.C.

IT is well known that acetyl-salicylic acid is a somewhat unstable compound, being fairly easily hydrolised into its components acetic acid and salicylic acid, the reaction, which is exothermic, taking place slowly but gradually, even under ordinary atmospheric conditions. Though there is evidence of this instability in much of the acetyl-salicylic acid on the market to-day, nevertheless, in the main, the quality of the British product is quite up to the standard of the pre-war drug imported from Germany.

The standard of purity set by the British Pharmacopœia requires the absence of uncombined salicylic acid as indicated by the following test : On shaking 0.5 grams of acetyl-salicylic acid with 20 c.c. of water and adding 1 drop of $FeCl_3$ test solution no violent coloration should be produced; on the other hand, no test is given to eliminate the presence of uncombined acetic acid, though if decomposition has taken place, as will be the case with impure samples, it follows that both acetic and salicylic acids will have been formed in proportionate amounts (as per equation), and may both be present.

$C_6H_4(OCOCH_3)COOH + H_2O = C_6H_4(OH)COOH$		CH_3COOH
Mol. wts.	180.064 = 138.048	60.032
Percentages (approx.)	100 = 76.66	33.34 (total 110)
Ratios (approx.)	3 = 2.3	1

In practice, however, it is not uncommon to get samples of acetyl-salicylic acid which smell strongly of acetic acid, but which show no trace of free salicylic acid when tested by the B.P. method given above (which does not require the substance to be in a state of fine powder), showing that it is possible for the substance to contain impurities in considerable amount and yet comply with Pharmacopœial requirements.

Acetyl-salicylic acid being used extensively in medicine, under the trade name of aspirin, both physician and patient are fastidious about the odour. The best "makes" have comparatively little odour, acetous or otherwise, while inferior "makes" smell strongly of acetic acid, which must be regarded as evidence of impurity.

Moreover, as it is possible to mask the B.P. coloration test for free salicylic acid, particularly in the case of compressed tablets, in a manner not readily detected, it follows that a reliable method for the determination of free acetic acid is of the first importance.

The method used was that devised by Mr. A. Tompkin, A.I.C. :

> One gram of acetyl-salicylic acid is placed on the bottom of a small wide-mouthed bottle, fitted with a cork through which a piece of copper wire is passed. Allow the powder to settle for ten minutes with the cork inserted. Now wash a piece of blue litmus-paper with distilled water, removing all surplus moisture with filter-paper, then hang it on to the wire; replace the cork tightly in the bottle and take careful note of the time which elapses before the first red spot begins to show on the litmus-paper.
>
> A minimum period of time was then fixed as a working standard.

While some years' experience has shown that useful comparative results can be obtained by this method, especially if the litmus-paper be carefully standardised, it does not give quantitative determinations, and, on the suggestion of Mr. H. Droop Richmond, F.I.C., the present research was undertaken by the author.

The determination is carried out in the following manner : Pure, dry air is drawn through finely powdered acetyl-salicylic acid (about 120 mesh or even finer), and then through distilled water. The latter, which will contain in solution any acetic acid, is then directly titrated with standard solution of NaOH, using phenolphthalein as indicator.

The apparatus consists of the following : A bell-jar (4 in. diameter), with opening at the neck and a ground flange at the bottom, is placed on a ground-glass plate. Through a hole in the centre of this plate is fitted a rubber cork, taking the stem of a glass funnel ($3\frac{1}{2}$ in. diameter) so that the mouth of the funnel can be enclosed inside the bell-jar and be air-tight. The neck of the bell-jar is also fitted with a rubber cork and connected by glass tubing with a Woulffe's bottle, the Woulffe's bottle in turn being connected to an aspirator or ordinary filter-pump.

Take 1.0 gram of the sample, which has previously been finely powdered, and spread carefully and evenly over a piece of fine muslin stretched over the mouth of the glass funnel and held in place by means of a small rubber band. Another piece of the muslin should then be superimposed, and the whole held in place tightly over the funnel by means of a second rubber band. The bell-jar, which must be thoroughly dry, is now placed in position over the funnel. Place 50-100 c.c. of distilled water (free from CO_2) in the Woulffe's bottle, and before commencing to aspirate see that all connections are air-tight. Do not let the air bubble through the Woulffe's bottle at too great a speed, in order to avoid a too vigorous disturbance of the powder, and, to obviate back suction when disconnecting the apparatus, first loosen the cork in the Woulffe's bottle, in preference to turning off the water-tap.

So-called "robe-muslin" was used, as this was found to retain the powder while allowing free passage of air; the same kind of muslin was used throughout, and, in fact, all the experiments were carried out as nearly as possible under like conditions. In order to ensure that the air shall come into contact with every particle of the powder, it is necessary to spread the latter in as fine a layer as possible. 1.0 gram seems to be a convenient quantity when spread over a $3\frac{1}{2}$-in. surface, and gave satisfactory results, though by using a larger apparatus a greater amount could, with advantage, be worked upon, which might also permit the use of a standard solution of NaOH stronger than N/500. A long, narrow bottle has some advantage over a Woulffe's bottle, as a smaller quantity of distilled water can then be used, and thereby a better end point obtained when titrating.

After aspirating for a definite period, say, one hour (average samples require about half an hour, while many gave up all their free acetic acid in less than half an hour; on the other hand, for very inferior samples a longer period may possibly be necessary), the contents of the Woulffe's bottle is then exactly neutralised with N/500 NaOH each c.c. required representing 0.00012 gram CH_3COOH exactly 1,000 c.c. = 0.120064 gram).

Supposing 5 c.c. N/500 NaOH to be required, then

$$\frac{5 \times 0.00012 \times 100}{1} = 0.06\% \text{ free acetic acid,}$$

or, for convenience, each c.c. required multiplied by the factor 0.012 gives the percentage.

The method described, when carried out with reasonable care, gave extraordinarily uniform results, provided the substance was finely powdered and not spread too thickly over the aspirating surface, and that attention was paid to the working details.

Table A shows the application of this method to the examination of various samples of acetyl-salicylic acid and its salts manufactured by British firms in Great Britain; for purposes of comparison three samples of foreign manufacture have also been added.

Table B shows the application of the method to samples of compressed tablets by the best-known makers.

Table C gives the results of a more detailed examination of three samples taken from each of the Tables A and B. These samples have been chosen as types which show

excess, theory, and deficiency of free acetic acid when compared with the free salicylic acid present.

Method.

The determinations other than that of free acetic acid call for little remark, but it may be mentioned that in the determination of the free salicylic acid, ferric ammonium sulphate (iron alum) was substituted for ferric chloride as a test solution; the former, not in itself being so intensely coloured, can be used with much greater delicacy (A. J. Jones, *C. & D.*, 1919, 91, p. 402).

The B.P. test for free salicylic acid was abandoned, as under the best conditions (the substance being finely powdered and the ferric chloride limited to one drop) it is not sensitive unless about 0.04 per cent. of free salicylic acid is present in the sample.

The B.P.C. test is equally unsatisfactory, owing to the fact that much more alcohol than necessary is used, and this has a serious depressing effect on the colour.

Unfortunately, the whole of the tests could not be carried out on the American and German samples of acetyl-salicylic acid and tablets, owing to shortage of material, but sufficient was available for the determination of the free acids.

When examining for odour, one should take particular care not to "agitate" the substance (particularly if in fine powder), as some of it may enter the nasal passages and become hydrolysed in contact with the moisture of the mucous membrane, with the formation of acetic acid which would at once be detected. Through this fault inexperienced critics have been known to condemn samples of merit. Many samples of the needle or plate variety, on being finely powdered, smell distinctly of acetic acid, which could not be detected in the original substance.

When examining the salts of acetyl-salicylic acid for free salicylic acid a slight modification of the previous method was made. The substance was finely powdered and shaken up with a small quantity of dehydrated ether in a graduated flask. After allowing to settle an aliquot portion of the ethereal solution was pipetted off, the ether removed by evaporation, and the residue, which would contain any free salicylic acid, dissolved in alcohol and treated in exactly the same way as for acetyl-salicylic acid.

By adopting this method the free salicylic acid is extracted, leaving behind the salts of acetyl-salicylic acid, together with any salts of salicylic acid; there is also less risk of error due to the continuation of hydrolysis during the carrying out of the test. On the other hand, the method has the disadvantage that it does not account for the salts of salicylic acid, which also may be products of dissociation. Many of the salts of acetyl-salicylic acid dissolve readily in alcohol, but on subsequent dilution with water hydrolysis is effected, sufficiently rapidly to interfere seriously with the satisfactory working of the test by the ordinary method.

This modified method was also used for determining the free salicylic acid present in sample Tablet No. 19 (see Tables B and C), since it was not evident by the usual method.

In the case of Table B, the percentages of the free acids have been based on the aspirin content and not on the total weight of the tablet; this enables a comparison to be made with the known purity of the original acetyl-salicylic acid from which the tablets were made.

It might be mentioned here that the presence of free acetic acid in amount usually found in samples of acetyl-salicylic acid appears to have no visible effect on the coloration test for salicylic acid, since the same result was obtained for the latter both before and after removal of the free acetic acid by aspiration.

As might be expected, some varieties of soluble starch, used in the preparation of the tablets, contain volatile acid which can readily be aspirated. One sample yielded an amount equivalent to 0.075 per cent. acetic acid.

Deduction.

It will be seen that in a large number of instances the free acetic acid found agrees with that equivalent to the free salicylic acid within the limits of error of the methods. In a few instances, however (Nos. 8 to 12, Table A), it is rather higher, probably due to the retention of a little of the acetic acid used in, or produced in, the course of manufacture. Some of the tablets, on the other hand (Nos. 1 to 7, Table B), show that much of the free acetic acid resulting from the hydrolysis of the acetyl-salicylic acid has volatilised. It should not be lost sight of, however, that in the case of a relatively low acetic acid value, this may have been influenced in part by an unusually high salicylic acid value resulting from the presence of impurities—such as salicyl-salicylic acid, salicylic anhydride, or even acetyl-salicyl-salicylic acid—which may be regarded as possible by-products in the manufacture of acetyl-salicylic acid.

Sample tablets Nos. 17 and 19 (Table C) gave curious results. The former was gelatine-coated and seems to have suffered during the process, while the latter was sophisticated, which may partly account for the high acid value.

Regarding the salts of acetyl-salicylic acid, No. 13 is quite a good sample, while No. 15 is an exceptionally bad one and yields high values throughout, particularly in the case of the saponification value. This is partly due to the sample having lost much of its water of crystallisation and partly to the presence of more than traces of ethyl acetate as an impurity.

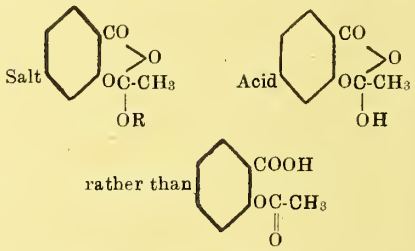
A glance at Table C shows that the free acetic acid present is far less in amount than that equivalent to the free salicylic acid, whereas the *total* acetic acid is not deficient, indicating that the reaction proceeds thus:

$$C_6H_4(OCOCH_3)COOR + H_2O = C_6H_4(OH)COOH + CH_3COOR$$

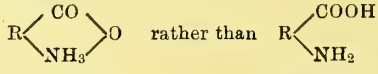
rather than as usually expressed, viz.

$$= C_6H_4(OH)COOR + CH_3COOH$$

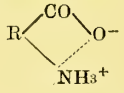
It is remarkable that acetyl-salicylic acid is so unstable, and that from its salts free salicylic acid and an acetate should be produced on hydrolysis, and this seems to suggest that the formula may be



This would only be in keeping with the behaviour of the COOH group when contiguous to certain other radicles. Thus the amino-acids are regarded as having the constitution:



though in a paper published quite recently, I. Langmuir (J. Amer. Chem. Soc., 42, 274, 1920) regards the constitution of the amino-acids thus:



the number of "bonds" allotted being determined by the application of an electronic theory called the "Octet" theory of valence.

The constitution of acetyl-salicylic acid, as suggested above, is put forward as being a possible explanation of the behaviour of its salts on hydrolysis. Much more evidence will be required, however, to remove it from the sphere of hypothesis, a subject affording scope for future research.

It is possible, of course, that the salicyl radicle is capable of displacing one (or even all) of the H atoms in

TABLE A.—EXAMINATION OF SAMPLES OF ACETYL-SALICYLIC ACID.

No.	Origin	Appearance	M.P.	Total Acidity after Saponification	In 10% Caustic Soda Solution		B.P. Test with $FeCl_3$		Free Salicylic Acid % determined	Acetous Odour (if any)	Free Acetic Acid % determined	Free Acetic Acid equiv. to Salicylic Acid
					Colour	Odour	On original subs. (if xtal)	On powdered substance				
1	British ...	White powder	136°	100·0	Very pale straw	Nil	—	Nil ...	0·03	Nil ...	Nil ...	0·013
2	British ...	White powder	137°	99·90	Very pale straw	Nil	—	Nil ...	0·01	Nil ...	0·001	0·004
3	British ...	Large pearly plates	136°	99·99	Pale straw	Disagreeable, resembles pickles	Nil ...	Pink ...	0·10	Nil ...	0·036	0·043
4	British ...	Small dense needles	137·7°	99·99	Clear ...	Practically nil	Nil ...	Very faint pink	0·06	Nil ...	0·022	0·026
5	American	Very small needles	*—	—	—	—	Nil ...	Pink ...	0·095	Nil ...	0·041	0·041
6	British ...	Large pearly plates	136°	99·90	Pale straw	Suggests pyridne	Mere trace	Pink ...	0·11	Nil ...	0·048	0·04
7	German ...	Small pearly plates	*—	—	—	—	Nil ...	Pink ...	0·10	Nil ...	0·063	0·043
8	Swiss ...	Small pearly plates	138·2°	99·90	Pale straw	Acetic ether	Nil ...	Faint pink	0·07	Nil ...	0·058	0·030
9	British ...	Small pearly plates	136·7°	99·72	Pale straw	—	Nil ...	Faint pink	0·07	Distinct ...	0·072	0·030
10	British ...	Small dense needles	136·6°	99·99	Straw ...	Acetous ...	Nil ...	Very faint pink	0·045	Strong ...	0·050	0·020
11	British ...	Small needles	138·2°	99·99	Pale straw	Trace of benzole	Nil ...	Trace ...	0·040	Nil ...	0·053	0·017
12	British ...	Creamy-white powder	137·5°	99·99	Straw ...	Acetous ...	Nil ...	Very faint pink	0·050	Strong ...	0·094	0·021

* Insufficient sample to do all tests.

TABLE B.—EXAMINATION OF SAMPLES OF ASPIRIN TABLETS.

No.	Origin	Appearance	Disintegration in 0·2% HCl at 40° C.	Ash %	Average weight per tab. (grains)	Aspirin content per tab.	Free Salicylic Acid % determined	Acetous Odour	Free Acetic Acid % determined	Free Acetic Acid equivalent to Salicylic Acid
1	Proprietary ...	Lettering very good	Immediate with lifting movement	Nil	5·83	4·97	1·17	Slight	0·050	0·510
2	Semi-proprietary ...	Good	Immediate	1·2	6·20	4·90	1·30	Slightly resinous	0·060	0·565
3	Proprietary ...	Lettering good	Immediate with lifting movement	Nil	5·86	4·96	0·36	Nil	0·036	0·156
4	Tablet-makers ...	Bad edges ...	Bad	Nil	5·08	4·59	0·24	—	0·026	0·104
5	Proprietary ...	Chocolate-coated	—	7.8	10·40	4·88	0·96	—	0·128	0·417
6	Wholesale manufacturing	Faintly mottled	Immediate	0·3	5·78	4·89	0·21	Slightly resinous	0·029	0·091
7	Semi-proprietary ...	Good	Immediate	1·3	5·72	4·80	0·66	Nil	0·095	0·287
8	Tablet-makers ...	Rough, with pink spots	Starts well, but does not completely break up	5·7	5·58	4·58	0·29	Slight	0·073	0·126
9	Semi-proprietary ...	Badly lettered	Immediate	Nil	5·85	4·58	0·21	Slight	0·062	0·091
10	Wholesale manufacturing	Good	Immediate	2·7	5·60	4·33	0·19	Nil	0·056	0·082
11	Proprietary ...	Lettered ...	Immediate	Nil	5·64	4·78	0·14	Nil	0·042	0·060
12	Tablet-makers ...	Picked badly ...	Very bad indeed ...	6·5	5·90	4·44	0·19	Nil	0·083	0·082
13	Tablet-makers ...	Lettering good	Immediate	2·3	5·77	4·67	0·20	Nil	0·086	0·087
14	Proprietary ...	Lettered ...	Immediate	0·7	5·86	4·89	0·12	Nil	0·063	0·052
15	Proprietary ...	Lettering good	Immediate	Nil	5·60	4·95	0·11	Nil	0·060	0·048
16	Wholesale manufacturing	Good	Immediate	Nil	5·77	5·05	0·08	Nil	0·048	0·035
17	Proprietary ...	Gelatined pink	—	5·0	8·60	4·72	0·17	—	0·130	0·074
18	Wholesale manufacturing	Good	Immediate	Nil	5·74	4·95	0·01	Nil	0·042	0·00
NOT CLASSIFIED.										
19	Tablet-makers ...	Bad edges ...	Only fair	2·3	5·76	4·86	*0·08	Nil	0·060	0·035
20	Calcium salt (German)	Soft	Good	17·3	8·80	7·70 (Ca. salt)	1·77	Nil	0·110	0·770

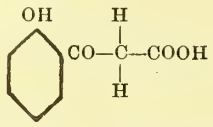
* B.P. test masked.

TABLE C.—FURTHER EXAMINATION OF TYPICAL SAMPLES.

Nos. From Tables A and B	Type	Aspirin Values		Products of Hydrolysis						
				Acetic Acid Values			Salicylic Acid Values			Total
	Free Acetic Acid present compared with that equivalent to the free Salicylic Acid	Acid Value direct titration	Saponification Value	Total ex Distillation	Free	Combined (by diff.)	Total ex Iodine	Free	Combined (by diff.)	
ACETYL-SALICYLIC ACID.										
Theory %	—	100·00	100·00	33·34	—	33·34	76·66	—	76·66	110·00
1	Deficiency	100·12	100·35	33·47	—	33·47	76·74	0·03	76·71	110·21
6	Theory	99·90	99·90	33·34	0·048	33·292	76·59	0·11	76·48	109·99
12	Excess	100·00	100·08	33·24	0·094	33·146	76·51	0·05	76·46	109·75
ASPIRIN TABLETS.—Results based on Aspirin content of the tablet, indicated by the Saponification Value (Complete Hydrolysis).										
1	Deficiency	99·70	100·00	33·12	0·05	33·07	76·62	0·17	76·45	109·74
12	Theory (approx.) ...	101·09	100·00	33·58	0·083	33·497	77·64	0·19	77·45	110·22
17	Excess	106·58	100·00	34·00	0·130	34·89	77·09	0·17	76·92	112·11
19	Unclassified ...	103·02	100·00	33·74	0·060	33·68	75·85	*0·08	75·77	109·59

* B.P. coloration test masked.

the alkyl group of acetic acid and thus of forming the isomeric salicyl-acetic acid :



However, it is extremely improbable that this reaction would take place directly.

Reference has already been made to the possibility of using certain substances in the preparation of aspirin tablets which render the coloration test with ferric-chloride solution abortive. Sample tablet No. 19 is an example of this. There was no evidence of the presence of free salicylic acid by the ordinary tests, and yet when examined by the modified method used for the salts of acetyl-salicylic acid (but substituting chloroform for ether as the extracting solvent) as much as 0.08 per cent. was found.

It was the presence of 0.06 per cent. free acetic acid in this sample which first roused suspicions and led to a determined search for the free salicylic acid. Moreover, the suspicion was strengthened by the fact that an amount of pure salicylic acid had to be added to the tablet equivalent to 0.125 per cent. of its weight before any violet coloration could be obtained, which appears to point to sophistication in amount more than sufficient to mask considerable traces of free salicylic acid; all of which serves to emphasise the need for determining the presence of free acetic acid in the analytical control of samples.

In addition to all the ordinary precautions, it is important in connection with the preparation of aspirin tablets to avoid contact with ionisable elements, which appear to accelerate or even induce hydrolysis. It is probable that traces of iron or of chlorides are sufficient to bring this about, such appearing to act after the manner of catalysts.

It is interesting to note that a few firms pack their products in cardboard boxes. The German firm of Bayer issue their tablets of calcium acetyl-salicylate in long square narrow tubes made of cardboard perforated at the top and bottom, which perforations are only apparent when the box is held up to the light, being thinly covered on the outside by means of the label. The carton itself is lined inside with a roll of white paper also full of perforations. This seems to be their method of assisting the escape of the free acetic acid. British manufacturers and packers might with advantage take note of this.

I have to express my thanks to my assistant, Miss P. Helen Gordon, for help in carrying out the experiments and to Boots Pure Drug Co., in whose laboratories the work was performed.

Discussion.

Mr. A. J. Jones said that it was desirable, in the case of this chemical, to arrange a test for limits of impurities rather than specific tests. As one took much more acetic acid in the form of vinegar than was present in acetyl-salicylic acid, there was no reason to be too squeamish. While it was desirable to have a reasonable degree of purity, they should not specify such a degree as to hamper the manufacturer in turning out a decent product. It would be a good thing if the British Pharmacopœia made some remarks as to tests considered physiologically undesirable; otherwise, an analyst might find such small traces of impurities that he might say they made no difference.

Mr. Nutter-Smith, in reply, said that he had no objection to a little free acid, but makers of salts of aspirin professed that these salts contained very little.

The next paper was taken as read.

The Determination of Hydrocyanic Acid.

By R. Leitch Morris, F.I.C.

The author undertook an exhaustive study of the various volumetric processes in use for the determination of cyanides, viz. :

1. The original process of Liebig : titration of the alkaline cyanide solution with standard silver solution. This is quite satisfactory when properly carried out.

2. Method of Fordos and Gelis. Little used, but useful in special cases—*e.g.*, for mercuric cyanide.

3. Volhard's method : complete precipitation as silver cyanide by adding excess of standard silver solution, filtering, and then determining the excess of silver in the filtrate by standard thiocyanate.

4. Titration of cyanide by Mohr's method, using potassium chromate as indicative of the complete precipitation.

5. Dénigè's modification of Liebig's process, on which the process of the B.P. 1914 is based.

1. Liebig's Original Process.

Properly applied this method is quite satisfactory, but when free hydrocyanic acid is in question there are several possible sources of error.

The acid must be saturated with but a slight excess of NaOH to form the cyanide, and any *great* excess of NaOH delays the end-point, hence leading to somewhat higher results. But a *deficiency* of NaOH causes a much more serious error, the results being then too low, and the greater the deficiency of NaOH the lower are the results. Results may be obtained showing only a mere fraction of the true strength in such cases, a serious matter in the testing of such a poisonous medicinal agent as hydrocyanic acid.

A study of the reactions involved explains the difference between Liebig's and the other processes in above list.

(*a*) When a solution of HCN or of an alkaline cyanide is added slowly to an excess of silver solution precipitation of AgCN is immediate. The continued addition of HCN only increases the precipitate till all the silver is converted into AgCN. But continued addition of alkaline cyanide causes the precipitate first formed to redissolve as the double cyanide

(*b*) Reversing the order of mixing : $AgNO_3$ added slowly to an alkaline cyanide gives no permanent precipitate till all the cyanide is changed to the double salt; then the next drop of $AgNO_3$ solution causes the beginning of precipitation of AgCN (the end-point in Liebig's process). The final *complete* precipitation of cyanide as AgCN is accomplished by adding exactly as much silver again as that used to cause the first sign of precipitation. The equations representing *a* and *b* are :

(*a*) $HCN+AgNO_3=AgCN+HNO_3$ } complete precipitation of
$KCN+AgNO_3=KNO_3+AgCN$ } both (CN) and K.

(*b*) $2KCN+AgNO_3=KCN,AgCN+KNO_3$.

No precipitate till this stage is complete. End-point of Liebig's process.

The addition of more $AgNO_3$ precipitates AgCN.

Another molecule of $AgNO_3$ gives the same final result as (*a*) :

$2KCN+2AgNO_3=2AgCN+2KNO_3$ } complete precipitation
i.e., $KCN+AgNO_3=AgCN+KNO_3$ } of both Ag and CN.

A point obvious from these equations which seems to have escaped notice is that since, in Liebig's process,

2HCN or 2KCN is equivalent to $AgNO_3$.
Similarly, 2KOH or 2NaOH ,, $AgNO_3$.

And, therefore, the amount of alkali required for exact conversion of the HCN into cyanide is twice as many c.c. of $N/10$ NaOH (or KOH) as the number of c.c. of silver solution used—

i.e., No. of c.c. of $N/10$ silver required $\times 2$ = c.c. of $N/10$ soda that should be used to convert the HCN into cyanide.

No. of c.c. of $N/1$ silver $\times 2$ = c.c. of $N/1$ soda required.

Taking 5 c.c. acid of 2 per cent. strength, which should require not more than 19 c.c. $AgNO_3$, the amount of $N/10$ soda required would be 38 c.c. In this case the use of 4 c.c. of normal soda will ensure accurate results.

Also, more than 10 c.c. of $N/1$ soda should never be used, since this is sufficient for a titration in which 50 c.c. of $N/10$ $AgNO_3$ are required.

From equations (*a*) and (*b*) it is obvious that in the case of HCN the addition of alkali is necessary to allow the Liebig reaction to take place by converting finally the HNO_3 which would otherwise be liberated into KNO_3.

Evidently, for this purpose, alkaline carbonates would serve as well as hydroxides, and at first sight it would

seem that this is an easy way of overcoming the difficulty of keeping the excess of alkali required sufficiently low. Were HCN not a volatile substance such would be the case, but since HCN is a very weak acid, which barely reddens litmus and does not decompose carbonates, it is obvious that, at the beginning of the titration, all the HCN present is in the free state, and this free HCN will be present up to the end, and this leads to loss owing to the continual agitation of the solution during titration.

After adding excess of alkaline hydroxide, however, this excess can be considerably reduced by the addition of a little sodium bicarbonate.

$$NaOH+NaHCO_3=Na_2CO_3+H_2O.$$

The average error in Liebig's process should not exceed 2-3 parts per thousand too high.

In Liebig's process 1 c.c $N/10$ $AgNO_3=0.005404$ gram HCN.

2. METHOD OF FORDOS AND GELIS.

This is also a very old process; the reaction was discovered by Serullas and Wöhler.

$$HCN+I_2=HI+ICN.$$

Hence I_2 is equivalent to HCN (or KCN), and 1 c.c. of $N/10$ iodine=0.001351 gram HCN.

Starch must not be used as indicator, as its presence leads to low results. The solution must be highly diluted. In the case of alkaline cyanides the solution containing about 0.05 gram of cyanide is diluted to about 400 c.c., a little CO_2 water added, and iodine solution run in till a faintly visible yellow appears in the solution.

In the case of HCN, sufficient NaOH is added to convert the acid to cyanide, excess of carbonic-acid water added to convert excess of NaOH into bicarbonate, and the solution titrated in the same way. The results are generally a little *lower* than those obtained by Liebig's process, but are fairly close to the truth, although a little excess of iodine is necessary at this high dilution to give the solution the faintest visible tint. The process is somewhat troublesome for hydrocyanic acid. It is a useful process for determining (CN) in HgCN.

3. VOLHARD'S METHOD.

Volhard's method is only useful in special cases. It is highly accurate, but the necessary filtration of the silver cyanide before the excess of silver can be determined makes the process tedious. All the halogen elements interfere. In this case 1 c.c. $N/10$ $AgNO_3=0.002702$ gram HCN.

4. MOHR'S METHOD.

This resembles the usual titration of chlorides, etc., by $AgNO_3$, using K_2CrO_4 as indicator. The solution must be neutral, and in the case of HCN this is accomplished by using MgO. The reaction is different from Liebig's reaction, since the end point shows the complete precipitation of cyanide, equation (*a*) above.

1 c.c. $N/10$ $AgNO_3=0.002702$ HCN.

The acid is added to excess of MgO, which must be chloride-free and titrated with silver as usual, with continual stirring. Though at one time official in U.S.P., the process has no advantage over that of Liebig.

5. MODIFICATION OF LIEBIG'S METHOD (DÉNIGÈS).

Dénigès ("Journ. de Pharm." [5], XXIX) suggests the use of KI as an indicator and solutions rendered strongly alkaline with soda or ammonia, and states that in this manner the end-point is sharply and quickly determined. (See Y.B.P. 1884.) This causes at the end-point the precipitation of AgI, which is the most insoluble of all silver salts, and thus gives the most accurate results in any modification of Liebig's method. It has been adopted by the B.P. 1914, but the compilers have, apparently, copied from the United States Pharmacopœia, and have overlooked the fact that the U.S.P. solution of KI is a 20-per-cent. one, while the B.P. solution is only 10 per cent., yet the amount to be used is three drops in each case. On further comparison of these processes it appears that at the end of the titration of the U.S.P. process the total volume of solution will be about 57 c.c., while at the end of the B.P. process the volume will be about 80 c.c. Hence, in the B.P. process, the mass concentration of KI in the solution at the end-point is only about a fourth as strong as in the U.S.P. process. It would seem, therefore, that the B.P. prescribes too little KI for the process to give a sharp end point. May not this be the reason that the B.P. process has been found unsatisfactory? Another suggestion to improve Liebig's process is due to Guerin in 1906, who recommended the use of a 3-per-cent. solution of borax as the alkaline agent in place of NaOH. This is excellent, and the author found that the amount of silver used in comparative titrations agreed exactly with that required by the original Liebig method, when the excess of alkali was kept as low as possible in the latter method. Any excess of borax is immaterial. Guerin states that ammonium salts must be absent, but that this difficulty can be avoided by adding 10 c.c. of saturated solution of boric acid to the liquid before titration.

Comparative tests undertaken by the author, gravimetric and volumetric by the processes described above, yielded the following results:

Series A.

(Results by weight in weight.)

Process.			
Gravimetric (as AgCN)	(*a*) 1·650%	(*b*) 1·643%	mean of 4=1.647%
,, as silver	1·648%	1.645%	(gravimetric)
Volhard (1 determination only)	1·651%		
Original Liebig (excess of NaOH slight) ...			mean of 6=1·650%
Fordos and Gelis			,, =1·645%
Using NH_3+KI			,, =1.648%

Series B.

(Same stock of acid, but two months later.)

Acid measured off by pipette (20 c.c.).

Original Liebig process			mean of 4=1·216 w/v
Using borax			,, =1·215 ,,
Using NH_3+KI...			,, =1·213 ,,

(All results obtained on same day.)

The iodide method adopted was to use about equal volumes of ammonia solution 10 per cent. and dilute hydrocyanic acid, adding from 0.1 to 0.2 gram of KI. The results certainly seem to show that the end-point is sharper with this modification, especially when over 40 c.c. (as in Series B) of $N/10$ $AgNO_3$ was required. In this case, using the same amount of HCN, the amount of $N/10$ $AgNO_3$ required was 0.05 to 0.05 c.c. *less* than that required by Liebig's process.

It has been shown that Liebig's process for HCN, properly conducted, gives quite satisfactory results, but that Guerin's suggestion of using borax solution avoids the uncertainty that may occur through the use of too much alkali. Comparison of the B.P. process with that of the U.S.P. and the Codex shows that the B.P., apparently, prescribes too little KI. However, if three or four times more KI is used, the process agrees well with the gravimetric results. It seems probable that any defect in the B.P. process may be due to an insufficiency of iodide.

On the motion of the PRESIDENT, a comprehensive vote of thanks to the authors of these papers was passed.

Practice Section.

The first meeting of this Section was on Tuesday afternoon under the chairmanship of Mr. D. H. Evans (President of the local Association), who called upon Mr. R. R. Bennett, in the absence of the authors, to read the paper on:

National Health Insurance Dispensing from the Point of View of the Sale of Food and Drugs Acts.

By F. A. ANDERSON, F.F.I., Clerk to the Salford Insurance Committee, and G. D. ELSDON, B.Sc., F.I.C., Public Analyst, County Borough of Salford.

BEFORE describing a few of the methods evolved in Salford for adapting the Sale of Food and Drugs Acts to dispensing carried out under the National Health Insurance Scheme, the authors paid a tribute to the Pharmaceutical Committee for the interest and zeal shown in endeavours

to secure and maintain an efficient dispensing service. Reference was made also to the improved position of pharmacists in regard to the dispensing of medical prescriptions, in proof of which it was pointed out that in Salford during the first year (1913) of medical benefit 405,748 scripts were dispensed by pharmacists at a cost of 10,891*l.*, while in 1919 there were 300,800 scripts, or 350,734 separate prescriptions, at a cost of 11,757*l.* 13*s.* The steps taken by the Salford Pharmaceutical Committee to conserve the Drug Fund, and so obviate the irritating custom of discounting were dwelt upon. The Committee were responsible for arranging with the Insurance Committee that poison bottles were to be included with the medicine bottles, and so charged on the deposit system. This position was regularised and made applicable to the whole country when the commercial tariff was introduced in 1916. The Salford Pharmaceutical Committee was also instrumental in obtaining for the pharmacists generally an additional allowance to meet the cost of supplying containers for ointments. When the testing of medicines supplied was deemed desirable, therefore, the Pharmaceutical Committee was consulted by the medical adviser to the Committee.

The first series of samples were obtained on prescriptions issued by the medical staff engaged in connection with the tuberculosis dispensary, and were taken in an informal manner—*i.e.*, the sample was not divided and a portion left with the pharmacist as required by the Food and Drugs Acts. On analysis, deficiencies were found and the Pharmaceutical Committee were consulted thereon, and their assistance was of considerable value in dealing with minor defects, certain standards being accordingly agreed upon between the analyst and the Pharmaceutical Committee. It is admitted that it is not reasonable to expect exact scientific accuracy in dispensing, as it is not necessary; on the other hand, accuracy is necessary, and it becomes, therefore, a matter of great importance to decide what degree of accuracy it is reasonable to expect. In Salford it has been mutually agreed that the strength of prescriptions should not differ by more than 10 per cent. from the truth, except in such cases as sodium bicarbonate, where 15 per cent. or thereabouts was suggested and accepted. In the case of potent drugs, however, it was insisted that a 10-per-cent. margin of error is too great, but it will be obvious that it is impossible to lay down a hard-and-fast rule. There is one other matter on which it is impossible to dogmatise, and difficult even to pass an opinion—the question of the size of bottles. The arguments advanced for the use of the bottle as a measure are, firstly, that a partially filled bottle is objected to by the purchaser, and, secondly, that as the bottle is divided into sixteen equal parts, the patient will obtain one-sixteenth of the amount dispensed—*i.e.*, the correct amount—at each dose. The objection, on the other hand, to the proceeding is that where a graduated measuring-glass is used (the most accurate method of dosing), an incorrect dose will result. The variations, however, are usually quite easily covered by the 10-per-cent. allowance suggested above. In any case, an error due to size of container is obviously on a very different moral plane from that of wilful dishonesty, and the same thing applies to carelessness in weighing, etc., but any error of dispensing affects the patient in the same way, so that, although carelessness is, from the point of view of others, less culpable, yet from the patient's point of view it cannot be too strongly condemned. In 1916 samples were obtained, with the assistance of medical practitioners on the Salford Insurance Committee's Medical List, and of these six mixtures were deficient and were investigated by the Insurance Committee. The defects were as follows: No. 1, containing 9 per cent. excess of pot. brom.; No. 2, deficiency of 8 per cent. of quinine and an excess of three and a-half times the correct quantity of acid. sulph. dil.; No. 3, deficiency of 15 per cent. of quinine; No. 4, excess of twice the correct amount of acid. sulph. dil.; No. 5, excess of 60 per cent. of bismuth. carb.; No. 6, deficiency of 30 per cent. soda sal. The explanations submitted by the pharmacists concerned were: No. 1, the capacity of the bottle might have accounted for the error; No. 2, the pharmacist could not accept the analyst's figures; No. 3, the pharmacist felt confident the prescription was dispensed as written, and contended that it would have been fairer had the sample been divided when obtained and one portion given to him; No. 4, the mixture was correct when it left the shop, and that owing to the procedure in taking samples he had been deprived of submitting a sample for analysis to an independent authority; No. 5, no explanation; No. 6, every care was taken in dispensing, and he would be sorry to lose his good name by any intentional dishonesty. The Insurance Committee were of opinion that the defects were as reported, but found no cause for suggesting dishonesty on the part of the pharmacists concerned. In each, the pharmacist was cautioned and directed to exercise care in future.

While the desirability of taking samples for analysis was conceded by the Pharmaceutical Committee, it was felt that, in the interests of all parties concerned, a more satisfactory method was essential. At this time there was no provision in the Regulations for this purpose. It was not until the issue of the Medical Benefit Regulations, 1916 (No. 2), that any provision was made, and then the difficulty was only partially met. The effect of this Regulation was to provide a procedure under which samples of medicines prescribed for insured patients might be obtained for analysis in circumstances in which there was ordinarily no requirement on the pharmacist to supply. The following is extracted from the Regulations referred to:

Third Schedule.

Part I.—Terms of service for persons supplying drugs and appliances.

Drugs, etc., to be supplied without charge.

9. All drugs and appliances shall be supplied to the person presenting such order as aforesaid free of charge to that person. Provided, nevertheless, that the pharmacist shall sell to any one of the persons mentioned in Section 13 of the Sale of Food and Drugs Act, 1875, or to any person authorised by such person, at the price usually charged to private customers any drug or medicine prescribed or specified on the appropriate prescription form provided by the Committee for the use of insured persons, and signed by an Insurance practitioner.

In view of this provision, the Insurance Committee approached the Health Committee of the corporation to arrange for samples for analysis. As a result the following scheme was agreed upon:

(1) The Medical Officer of Health to furnish the Clerk to the Insurance Committee with particulars of the medicines, etc., of which it is desirable samples should be taken, and indicate the districts from which such samples should be taken.

(2) The Clerk to arrange with one or more practitioners in the several districts indicated to write the requisite prescriptions on the ordinary forms of script issued by the Insurance Committee as for patients receiving treatment, and forward the prescriptions to the Clerk.

(3) The prescriptions thus obtained to be furnished to the Medical Officer of Health to enable the requisite samples to be obtained from pharmacists under agreement with the Insurance Committee in conformity with the Food and Drugs Acts.

(4) The medicines, etc., of which samples are obtained to be paid for by the Corporation at the rate usually charged by pharmacists to private customers.

The co-operation of the Panel and Pharmaceutical Committees in connection with the scheme was requested, and the scheme became operative on November 30, 1919.

The samples are ordinary prescriptions which the medical practitioners are in the habit of prescribing, and, up to the present, have generally been prescriptions selected from the local Pharmacopœia. Individual requests have been made by practitioners that samples should be taken of particular prescriptions which in use they have found to vary. Pharmacists are unaware until after the prescription is dispensed that it is required for testing purposes. In order that the pharmacist may be able, in having an independent analysis made of his portion of the sample, to identify the prescription and attach the report of his analysis, it has been arranged that the script shall be specially marked by the official taking the sample.

Should the sample be found to be satisfactory a suitable intimation is given to the pharmacist as soon as practicable. The first batch of samples (twenty-two in number) taken under the new arrangements was obtained in December 1919; of these eighteen were sufficiently near the standards agreed upon with the Pharmaceutical Committee as not to warrant their being reported as adulterated; three, however, were reported as adulterated—the deficiencies being as follows: No. 1, 38 per cent. deficient of boric acid (the sample was dispensed in a 12-oz. bottle instead of a 10-oz. bottle) No. 2, dispensed in a 12-oz. bottle instead of a 10-oz. bottle, therefore deficient in all ingredients to the extent of 20 per cent. No. 3, 50 per cent. deficient in potassium bromide. In each case the pharmacist was notified of the defect in the dispensing and warned as to the probability of legal proceedings should subsequent samples be found deficient.

It is of interest and satisfaction that samples were unobtainable in two cases. The prescriptions were for ten-grain tablets of quin. sulph., this being twice the strength of the tablets ordinarily stocked and ordered. The pharmacist referred the scripts back to the practitioner. During the first quarter of 1920 eight samples were obtained, and in two cases the samples were deficient. Both samples were obtained from the same pharmacist. The deficiencies were as follow: (1) 65 per cent. sodium salicylate and 95 per cent. potassium bicarbonate. (2) 63 per cent. sodium salicylate and 47 per cent. potassium bicarbonate. Proceedings were instituted by the Medical Officer of Health, and the pharmacist was fined 1*l*. Mention has previously been made that provision for the taking of samples of drugs for analysis has only been partially met under the Medical Benefit Regulations. Insurance Committees are obviously, therefore, dependent upon the voluntary assistance of practitioners in this direction. So far as Salford is concerned, practitioners—with negligible exceptions—have given the necessary assistance. Otherwise the scheme would have been unworkable. It is, however, desirable that the Medical Benefit Regulations should be so amplified as to make it obligatory upon practitioners to furnish to the Insurance Committee the prescriptions necessary for the purpose of taking samples equally with the obligation of pharmacists to supply. Particulars as to prescriptions issued, and annual cost of same, including number of insured persons treated, also mean count of register, were then given.

Discussion.

Mr. H. WYATT pointed out the inadvisability of bringing forward a paper describing accuracies and inaccuracies in dispensing, and condemned the giving of such instructions to apprentices, who should be taught to weigh and measure such drugs as sodii bicarb. as carefully as liquor strychninæ. Many pharmacists when making solutions did not distinguish between the avoirdupois ounce and the apothecaries' ounce, and this was frequently the cause of trouble. The paper was not fit to publish, as it might get into the hands of the general public. As regards analysis, the medicine should be taken as it stands.

Mr. J. G. JACKSON (Sheffield) endorsed Mr. Wyatt's remarks, suggesting that such statements should not be published and the paper should be suppressed.

Mr. L. MORETON PARRY said the paper disclosed a determination by an Insurance Committee over a long period to find the weak point in pharmacists' armour. He believed the proportion of weak men in the ranks of pharmacists was comparatively very small.

Mr. J. RUTHERFORD HILL suggested that the meeting should resolve to disapprove of the idea that there is any inaccuracy in dispensing, as complete accuracy is aimed at. We, as a profession, hold that perfect accuracy is essential, and do not admit 10 per cent. or 15 per cent. of error. Under the Insurance scheme, the pharmacists should do or immediately supervise the dispensing, and no unqualified youth of nineteen should be allowed to make a solution, as such a solution was part of the dispensing.

Sir WILLIAM GLYN-JONES deprecated any censorship of the papers, or the saddling of the Conference with the responsibility for any paper submitted. He thought it wrong to suggest the suppression of a paper. The paper should be referred to the two authorities in England and Wales and Scotland whose business it was to deal with complaints. The suppression of the paper would carry a far greater condemnation than the paper contained. Inadequate remuneration was no excuse for slipshod work in pharmacy, and the two things should be kept distinct.

Mr. DAVIS thought that it was difficult enough to get papers, and the effect of withdrawing one which had been accepted would be far from beneficial.

Mr. F. W. CROSSLEY-HOLLAND said the question divided itself into the moral and the legal aspect. The legal aspect was alone serious. Under the Sale of Food and Drugs Acts the degree of accuracy was the highest obtainable, and that should be aimed at whatever the ingredient of a prescription.

Mr. HODGSON (secretary to the Liverpool Insurance Committee) suggested that reports of analyses ought to go to the Pharmaceutical Sub-Committee, as such a proceeding would be better for both pharmacist and Insurance Committee.

Mr. SCHOLES (Salford) agreed with both the writers of the paper and with everyone else in the room. (Laughter.) The paper had been misunderstood. He did not agree with any deviation from accuracy. He moved: "That the thanks of the Conference be tendered to the authors of the paper, and that, without any expression of opinion on the part of the Conference, the attention of the Local Associations Executive and the Standing Committee in Scotland be called to the paper."

Mr. WYATT seconded the motion, which was adopted.

Mr. T. EDWARD LESCHER remarked that the papers are put forward as dealing with matters of interest, but that does not signify acceptance of the view put forward. He agreed with Sir William Glyn-Jones that the paper expressed an opinion of others than pharmacists, and that the question of accuracy or inaccuracy was condemned by the Practice Section of the Conference.

Mr. H. WYATT, in seconding the resolution, mentioned that he intended no discourtesy towards the authors.

The Chairman then called upon Mr. J. P. Gilmour to read his paper on:

Some Ethical Problems in Pharmacy.

By J. P. GILMOUR.

THE author introduced his paper with a review of the history of the term "pharmaceutical ethics" which, he showed, was first used in 1855 by Jacob Bell, who suggested that a code of ethics for pharmacy might apply (1) to the mode of conducting business; (2) the relations between principals and assistants; (3) regulation of prices, and (4) nostrums. The code of the American Pharmaceutical Association (1852) was articulated. Article 2 deprecated the underselling of neighbours, later known as "scalping"; 3 imposed a high standard for purity of drugs; 4 was directed against counter-prescribing and payment of commission to medical men; 5 dealt with the duties of pharmacists towards medical men; and 6 prescribed the duty of the pharmacist to obey the precept "Freely ye have received, freely give" in respect to additions to pharmaceutical knowledge and art. Since 1852 many similar codes have been given to the pharmaceutical world. The Glasgow Chemists' Association was responsible for one which recommended disciplinary powers as a terror to evil-doers. There is no end to the making of codes of ethics, but their multiplication does not seem to have much, if any, influence on human conduct in general. The only progress is in the diffusion of them and the consequent higher general standard of action.

After referring to the law and morals, and drawing attention to the frequent difficulty of deciding upon a given course, Mr. Gilmour indicated that in such cases the conscience should be the supreme court.

With regard to the sale of methylated spirit, to refuse sales on insufficient grounds would inconvenience the public and restrict trade. There are some pharmacists who maintain that they are under no moral obligation to be careful. But the pharmacist is in honour bound to

exercise the utmost care, even at considerable monetary loss to himself, to avoid supplying the spirit to drinkers of it. The sale of contraceptives and of medicaments for venereal prophylaxis is a matter for the pharmacist himself to decide. The sale of proprietaries was next considered, and the author said most pharmacists in retail business have proprietaries of their own, and, pending legislation, the pharmacist, always keeping in mind his professional obligations and his guardianship of the public safety, must here also exercise his moral judgment.

Counter prescribing for simple ailments was defended by Mr. Gilmour in a quotation from a paper read on the subject at the conference of 1877 by the late Mr. S. R. Atkins.

The discussion on professional secrecy at the recent Cambridge meeting of the British Medical Association was next referred to by the author, who contrasted the relative positions of the doctor and pharmacist in the matter. The central idea expressed by the paper showed that in a workaday world people are often guided by partial knowledge and experience and incomplete moral inductions, but these rough-and-ready criteria and rule-of-thumb methods are invariably safer than grandiose codes of ethics.

Discussion.

The Chairman proposed a vote of thanks to Mr. Gilmour, which Mr. Wokes (Liverpool) seconded.

Sir W. Glyn-Jones said such matters were for one's own conscience. The ethics of this generation were higher than those of the last generation, and of late great progress had been achieved in that direction among pharmaceutical students. The code of ethics was as high among pharmacists as in any other profession, even lawyers, and will be higher.

Mr. J. Rutherford Hill said that the question of ethics and discipline is being raised under the new legislation.

Major E. Saville Peck said that, after a few years' absence from pharmacy, he was amazed, on his return to it, at the development in this country of *esprit de corps*. This he ascribed to the organisation and influence of local Associations.

Miss Buchanan endorsed the tributes to the paper, and a cordial vote of thanks was passed.

Wednesday Morning, July 21.

Science Section.

There was a good attendance when the President took the chair. Mr. D. Lloyd Howard and Mr. C. H. Hampshire were on the platform, and a large reading-stand was conspicuous at one end of the table.

The first paper was read, in the absence of the authors, by Mr. F. H. Carr.

The Assay of Aconite Preparations.

By E. J. Chappel, A.I.C., and Noel L. Allport.

[abstract.]

The method described in the B.P. for the assay of tincture and liniment of aconite involves a loss of time caused by the tedious process of filtrating the acid solution of the alkaloid extracted. As a result of many experiments the authors recommend the following method :

Fifteen c.c. of the liniment, or 100 c.c. of the tincture, is evaporated at low temperature to remove the bulk of the alcohol. Five c.c. of 10 per cent. sulphuric acid diluted with 20 c.c. of water is added, and the whole is transferred to a separator, with the assistance of a glass rod to break up the separated resin; the dish is then carefully rinsed with a little water. About 20 c.c. of petroleum ether (B.P. 40°-60°) is added and the mixture shaken. Separation follows rapidly, and the aqueous liquid is drawn off and again shaken with petroleum ether. The two petroleum-ether solutions are mixed, rinsed twice with water, and the washings added to the acid liquid, which is then rendered alkaline with ammonia and extracted four times with ether. The ethereal extracts are washed successively with the same portion of water, after which they are run into a flask and evaporated to dryness. The alkaloidal residue is dried at a low temperature to ensure removal of ammonia, and is then titrated in the usual manner.

This process may also be applied to the assay of aconite root, by first preparing a tincture as directed by the Pharmacopœia. The results obtained by this method are to all intents and purpose identical with those given by the more lengthy process of the British Pharmacopœia, and it offers the great advantage of avoiding troublesome filtration, which may take several hours.

These experiments were carried out by the authors in the laboratories of The British Drug Houses, Ltd.

Discussion.

Mr. A. W. Gerrard referred to the difficulty of emulsification, due largely to the resins that had to be dealt with. It was necessary, when using ether, to have absolute ether. Where chloroform would extract alkaloids, it was preferable to ether. The points of the method might appear small, but they were really very important, and therefore the paper was a very useful one.

Mr. Carr, in reply to questions, said that he thoroughly approved of the method of the authors. Petroleum ether was useless as an alkaloidal solvent, but was useful for extracting the fat before extracting the alkaloids.

The President, in thanking the authors, said that Mr. Carr knows more about aconite than anyone else.

The next paper was :

An Examination of Quillaia Bark and Commercial Saponins.

By Jules Cofman-Nicoresti, F.C.S., and Snow B. Tallantyre, B.Sc., F.I.C.

[abstract.]

The products known as saponins have recently become of importance on account of the peculiar property they possess, when in solution, of lowering the interfacial tension between substances, and hence to be of use as foaming, emulsifying, wetting, and cleansing agents. Most of the saponin of commerce is prepared from quillaia bark, and the authors were able to establish that at present there are three different varieties of bark on the market : (1) The official bark, obtained from *Quillaia saponaria*, Molina; (2) Quilled quillaia bark, from *Quillaia smegmadermos*, D.C.; (3) the flat false bark, from *Quillaia peppigi*, Walpers, or *Quillaia lancifolia*, Don. The microscopical appearance of the three barks did not appear to show any marked difference. With regard to their chemical examination, the authors' first efforts were directed towards obtaining the best solvent for removing the saponins from the bark in as pure a condition as possible. Of the many solvents employed, water or mixtures in which water was present (*e.g.*, aqueous alcohol, acetone, or glycerin) were the only ones with which it was possible to extract easily all the saponin. Most non-aqueous solvents dissolved practically no saponins at all, only small quantities of resinous and oily matter.

In working with aqueous solutions of saponin or quillaia bark extract, it was found necessary to add some preservative (*e.g.*, alcohol chloroform, etc.,), as otherwise fungi soon start to grow and cause decomposition. In one case a luxurious growth of *Penicillium glaucum* was found on leaving the solution in an open vessel two days. Although water was found to exhaust the barks of saponin, much other matter was removed (*e.g.*, sugars, gums, etc.), and it became, therefore, necessary to determine the amount of saponins in the aqueous extract, in the presence of these other substances.

The method found to be the most convenient is the sapogenin one, which is based on the fact that saponins on boiling with weak acids are hydrolysed (like all glucosides) into sugars and insoluble neutral bodies termed "sapogenins." The clarified saponin solution is boiled for a short time with dilute hydrochloric acid, allowed to cool, and the precipitated sapogenin separated, well dried, and weighed. The reaction is a highly sensitive one, very dilute solutions promptly giving a precipitate of sapogenin, and it has the advantage of purity, as no other substance present in the bark is likely to be precipitated under these-

conditions. The reaction in its simplest form can be expressed by the equations

(*a*) $2.C_{19}H_{30}O_{10}+8\ H_2O = 4.C_6H_{12}O_6+C_{14}H_{22}O_4$
(Quillaiac acid) (Glucose) (Quillaiac sapogenin

(*b*) $2.C_{17}H_{26}O_{10}+7.H_2O = 4.C_6H_{12}O_6+C_{10}H_{18}O_3$
(Sapotoxin) (Glucose) (Sapotoxin-sapogenin

although it is undoubtedly more complex, as at least small amounts of several other sugars are produced (*e.g.*, galactose, pentoses, etc.), and a small proportion of a volatile body.

It has been found that the saponins from quillaia bark, when pure, decompose on the average to yield 31.1 per cent. of sapogenin, so that one part of sapogenin is equal to 3.22 parts of saponins. This factor is based on Kobert's statement that quillaiac acid yields 33.3 per cent., and sapotoxin 30.0 per cent. of the same sapogenin, and that the saponins of quillaia bark consist of one-third quillaiac acid to two-thirds of sapotoxin.

The process adopted was to extract about 20 grams of the finely cut bark with four successive parts of boiling water of about 100 c.c. each. The clear united filtrates (preferably clarified with fuller's earth or other agent) were acidified with 50 c.c. of concentrated hydrochloric acid and boiled for one hour, care being taken to avoid foaming, which is most liable to occur at the start. The whole is then allowed to cool, and the sapogenin filtered off through a tared filter-paper, washed well, and dried for several hours at 100° C., until constant weight is obtained.

The table below shows some of the results obtained with different kinds of bark :

Nature of bark used	No. of sample	Per cent. of water so matter	Per cent. of sapogenin	Per cent. of alcohol soluble-matter	Per cent. of saponin calculated from sapogenin	Per cent. ash of bark
Genuine	1	32·80	—	—	—	—
	2	34·40	3·35	22·25	10·73	9·05
Quilled	1	29·4	3·0	19·75	9·66	9·18
	2	27·25	3·10	—	9·98	10·20
Supposed false flat bark	1	26·20	3·06	22·60	9 87	9·78
	2	21·40	2·76	—	8·93	9·35

It will be seen that the genuine bark tends to give more water-soluble matter than the others. The authors also determined the saponin present in the official tincture of quillaia by the above sapogenin method, and the result appears to show that the soluble matter consists substantially of saponin.

Total solids per 100 c.c. of tincture (dried at 100° C.) =1.19 gram.

Sapogenin from 200 c.c. of the tincture (*a*) =0.588 gram.

Sapogenin from 200 c.c. of the tincture (*b*) =0.598 gram.

Saponin content of tincture per 100 c.c.

$$=\frac{0.593 \times 3.22}{2}=0.95 \text{ gram.}$$

Corresponding to 80 per cent. of the total solids.

It is necessary to get rid of all the alcohol by long boiling (preferably done by evaporation to dryness at a low temperature) before the sapogenin is separated, as the latter is readily soluable in alcohol, even when fairly dilute. Some commercial saponin samples were examined, and the results are tabulated below. Since the source of these samples is unknown, the saponin-sapogenin factor has been assumed to be the same as for the quillaia-bark saponins, which is only approximately true.

The following table gives the results obtained :

No.	Moisture loss at 100° C.	Per cent. sapogenin yield	Per cent. saponin calculated from sapogenin	Per cent. acidity to Ph.Ph. as HCl	Per cent. ash	Alkalinity of ash as Na_2CO_3 on original substance. Per cent.
1	8·76	15·50	62·8	1·46	9·05	6·02
2	7·75	20·10	64·70	3·25	8·20	5·20
3	8·80	18·50	59·6	2·24	9·35	5·09

Attempts were made to estimate saponin by the emulsifying power of its solution, but the experiments were not very successful owing to the difficulty of deciding when emulsification was complete. Benzene was found to be the most useful medium for studying emulsification of saponin solutions, some substances, such as liquid paraffin, scarcely emulsify at all; others, like olive oil, turpentine, carbon tetrachloride, form extremely viscous masses. Regarding the property of saponin solutions of retaining gases in solution, a few experiments undertaken by the authors seemed to show that this property was not so great as they had expected. Thus a 1-per-cent. solution of commercial saponin absorbed 1.73 times as much CO_2, after passing the gas continuously for about six hours, as an equal amount of pure water under the same conditions—viz., 17° C. and 753 m.m. pressure. The various experiments seemed to show that no very exact figures could be obtained for this property of saponin solutions, there being possibly a time and other factors, and the subject requires further investigation.

The hæmolytic test was applied to the aqueous extract of quillaia bark, as well as to solutions of commercial saponin of various strengths, and both gave strong positive results, even in very dilute solutions. As regards the toxicity of saponins, the authors think that in spite of its strong hæmolytic property it is not always as poisonous as it is usually supposed. It is stated that the oral dose is 500 times weaker than the injected. Since saponin solutions are easily split into sapogenin and sugar by dilute acids, it is conceivable that when saponin is taken by the mouth it may be hydrolysed in the stomach so that it does not develop its full hæmolytic property. Following these researches the authors are inclined to think that the three kinds of quillaia bark at present on the market, though showing minor differences, are different forms of the bark of one species, *Quillaia saponaria*, Molina. Since the only official preparation is the tincture, and as the process for making this with 60-per-cent. alcohol only extracts a small portion of the saponins present in the bark, it makes little difference which of the three kinds of bark is used. Considering the low solubility of saponins it is advisable that the tincture should be made with a more dilute alcohol. A watery extraction with only enough alcohol to prevent fungoid growth (15 to 20 per cent.) should be an improvement on the present tincture. For a quick and accurate determination of saponins, the sapogenin process above described is recommended.

The experiments in connection with the above work were carried out in the analytical laboratories of the Society of Apothecaries of London.

DISCUSSION.

Mr. HOLMES pointed out that there was a considerable difference between the two barks from a botanical as well as from a commercial point of view.

Mr. JENSEN inquired whether any application had been made of the haemolytic properties of saponin. ("No," from Mr. COFMAN-NICORESTI.)

Mr. GRIER remarked that the physiological method of estimating saponin was well known. Saponin accelerates the heart: it has no toxicity when administered *per os*, but only when injected. The heart then dies by sheer acceleration. A pharmacist had tried the addition of tincture of quillaia to extract of male fern; it worked well, and this would thus seem to be a natural way of administering male fern.

Mr. COFMAN-NICORESTI, replying to the discussion, suggested that sufficient work had not been carried out to show the toxicity of saponin when injected. The toxicity was more probably due to local irritation. Injections into a frog took place through the lymph sac.

The PRESIDENT conveyed the thanks of the meeting, and called upon Mr. Jensen for the next paper.

Adsorption Medicines and Similar Remedies with Local Action.

By H. R. JENSEN, M.Sc., A.I.C.

THE author described new types of remedies used during the war, especially at the hospitals connected with the Liverpool Tropical School. At the outbreak of the war the best treatment known for the destruction of the amœbic parasite frequenting the large intestine, more

particularly in the sub-acute form of dysentery, was the hypodermic injection of emetine. On the assumption that the prolonged—as distinct from the delayed—action of the emetine was the most important factor in dosage, Dr. H. H. Dale, F.R.S., introduced the use of emetine bismuth iodide, devised by Du Mez. This compound should be practically insoluble in the acid stomach, but in the alkaline small intestine free emetine is gradually liberated, and passes through for local action on the parasites in the large intestine, where it is dissolved by the fermentation acids. This is a mechanism analogous to that of salol. Du Mez' analysis of his compound, prepared by the addition of Dragendorff's reagent to a 1 in 300 solution of emetine indicated a composition (emetine), $(5HI)BiI_3$, with a content of 29 per cent. of emetine.

Concurrently with this use of emetine, Allan in America, and Professor Stephens at the Liverpool School of Tropical Medicine, made an extensive clinical study of the numerous cases of subacute dysentery, using a proprietary adsorption compound of "total alkaloids" of ipecacuanha in physico-chemical union with a hydrous aluminium silicate derived from a clay or fuller's earth, as devised by J. V. Lloyd. Chemically this compound reacts in the same way as the double iodide, being insoluble in acid solutions, and liberating alkaloids with alkalis. In 1917, in ignorance of the extensive American master patents in such remedies, the author prepared a new series of drugs, for which purpose, as they were not otherwise obtainable, a temporary licence was issued to cover use in the Government hospitals.

Preparation.

The simplest method is by suspension of a suitable fuller's earth in a solution of the alkaloid salt or galenical extract. On shaking combination occurs at once, when the product is filtered off, washed and dried with special precautions. Adsorption is in general greater in aqueous than alcoholic solution, and in strong than weak concentration. In practice special technique is required to obtain a product of the great lability desired, with which decomposition will not be too slow. The earth should be selected with the highest degree of hydration, and usually with high iron and calcium content. The high initial adsorptive value required, which cannot be gauged by its well-known bleaching power but may be related to the detergent quality, must be raised by a series of lixiviations to the greatest extent. In addition the concentration in which the drug is primarily dispensed in the adsorbent, as well as the degree and nature of after dilution, are factors.

A special emetine adsorption was devised and very carefully tested on 100 "refractory carrier" cases under the auspices of the Medical Research Committee, at Reading and Mont Doré Hospitals, and at the Liverpool Tropical School. The remedy was found to be fully effective in stopping the excretion of the vegetative-like cysts, and "entirely free from the gastric irritation which is the bane of the official double iodide." Its cost was half that of the latter. The emetine used was prepared by special process whereby no harmful and unnecessary refining was employed. It was, in fact, very thoroughly decephaelinised "total alkaloids," and the whole separation was accomplished in solution throughout retaining the best colloid form optically unchanged. Concentrations of 5 to 8 per cent. were found effective. A similar cephaeline compound was found to be very irritant and had to be discontinued, proving the activity of the preparations, and confirming the inferiority of "total alkaloid" adsorption.

Among the other compounds prepared and also used were those with the total alkaloids of opium, with hyoscyamine, quinine, acriflavine, brilliant green, allantoin, antipyrin, thymol, and also with enzymes. The function of these drugs in this combination seems to fit in admirably with Dr. H. H. Dale's description: "Inactive depôt-material, remaining longer in the body and from which colloid-aggregates, active materials are continually supplied in the form of ions of therapeutic value passing into true solution, which is always so dilute as to prevent irritation of sensitive tissue." The concentration of ions may be advantageously increased locally, as when the colloid particles adsorb on the surface of amœbæ or bacteria, and thereby increase the concentration of the alkaloid ions where of greatest importance. This effect would resemble a bombardment changing to short range when even a smaller weight of projectiles can be more destructive.

In conclusion, the author expressed the view that it would be to the advantage of us all that the pharmaceutical expert should in therapeutic matters, as in the compilation of the Pharmacopœia, have greater influence.

Mr. Jensen delivered his paper without a too-close adherence to the manuscript, so that it gained in interest and actuality. In addition to the points set forth in the printed abstract, he also emphasised the possibilities of partial recombination before the separate portions of the adsorptions had finally left the body. Mr. Jensen suggested that it would be interesting to observe to what extent alkaloids oxidised or reduced while adsorbed, and that it must be determined what the adsorbing ratios were with alkaloid solutions of gradually decreasing concentrations, as must the exact quantitative reactions of a saturated adsorption to solutions of other alkaloids.

Discussion.

Mr. Carr expressed his delight with the work revealed in this paper. It was a kind of work with which pharmaceutical research is particularly concerned. The rate of adsorption needs to be varied by the clinician; and, when we know how to get the most suitable rate of adsorption, we open a field for great advances in pharmaceutical research.

Dr. Symes suggested that due consideration should be given to the condition of the patient. This was one of the difficulties in any investigation of this kind. It was well known that some persons were very susceptible to belladonna or quinine, for example.

Mr. Gerrard said that one of the most pleasing results of Mr. Jensen's contribution was to find the pharmacist associated with the physiologist. There should be more of that association.

Mr. Gamble, after congratulating the author, pointed out that often, we must assume, the difference between the crude drug and the active principle is the rate of adsorption. The blame for an unsuccessful issue in the administration of emetine bismuth iodide was frequently given to the pharmacist. (Laughter.) We have not reached a stage when we can assure medical men that any product will be absorbed in the intestine after passing unchanged through the stomach. The effect of emetine bismuth iodide on amœbæ is sometimes *nil*. Extreme praise at a premature stage was undesirable.

Mr. Hampshire remarked that emetine bismuth iodide is still used in quite a considerable quantity in hospital practice. It was administered in gelatin capsules: a certain amount of vomiting was expected, and this was regarded as a necessary evil. He congratulated the author on refraining from claiming imaginary benefits on the basis of electrical changes. (Laughter.)

Mr. Grier observed that certain experimental trials of emetine bismuth iodide went to show that its amœbicidal value was *nil*.

Mr. Jensen, replying to the discussion, said that there was no doubt that in fuller's earth colloidal matter is present, but not in so-called soluble form. Clinical tests had been extensive enough to show that, in many cases in which local action is required, there is an advantage in these new products. Emetine bismuth iodide had been given up at Liverpool, not because of any vomiting action, but on more serious grounds, *i.e.*, the permanent after-effects.

The next paper was on

Plaster Mulls.

By A. W. Gerrard.

So long ago as 1886 a class of preparations called by the above name were introduced to the medical profession of this country by Professor Unna, a German scientist, of Hamburg. They are also known as "Mullplasts" and "Guttaplasts." Professor Unna's communication

on the subject appeared in the "Lancet" of September 25, 1886, and an abstract of the same in the "Year Book of Pharmacy" for 1887 (p. 296). A result of this communication was to create a demand by dermatologists and others for these particular preparations, but British pharmacy at that time does not appear to have risen to the occasion by producing the goods. Hence they were "made in Germany," and at a later date a German firm of manufacturers opened a branch in London for the supply of these and other products. Being an alien firm, however, they had to close down on the outbreak of war, and consequently their goods could no longer be obtained. It was this circumstance which, as an old plaster specialist, attracted the author's attention to the subject. For the better understanding of what is meant by a plaster mull, it may be described as a soft plaster or preparation somewhat between a plaster and an ointment, but partaking most of the character of a plaster. It should adhere readily and lightly to the skin, be soft and conformable to its surface, yet be easy of removal without a dragging pull on the skin. It takes its name of "mull" from the fact that a soft cloth known in cotton technology as a mull is used as the base on which to spread the medicated pastes. A soft, fine, open-wove bandage material is satisfactory for the purpose. Having procured a suitable mull cloth, it is essential for it to undergo some process of proofing. This is done in the case of German-made plaster mulls by means of a thin layer of gutta-percha, hence the name "Guttaplast." This, however, has now been superseded by other materials. The proofing which the author found most suitable and satisfactory is a strong paste (one in ten) made of indiarubber and benzol, evenly spread over the surface of the mull. Rubber gives a softer, more pliable, and adaptable proofed cloth than gutta-percha. The object of proofing is to prevent the various pastes from soaking through the mull and soiling the patient's linen. Further, it maintains the strength of the medicament by keeping it on the mull. Both of these are important points of improvement over the usual methods and results of applying ointments. Dr. Unna recommended a paste of aluminium oleate to carry the various drugs, but, after many experiments and tests, the author is in favour of a paste compounded of indiarubber, wax, and benzoated lard, as such a combination can be, if necessary, readily hardened by the addition of wax, softened by the addition of lard, or made more adhesive by increasing the indiarubber.

The following formula is one which was selected after many trials as giving a generally useful stock paste; with it most of the required drugs may be incorporated:

PASTE FOR PLASTER MULLS.

Indiarubber paste (1 in 10) ...	5 oz.
White wax	1 oz.
Benzoated lard	3½ oz.

Melt the wax and lard with a gentle heat, pour it slowly on to the rubber paste, continuously stirring until intimately mixed. The gentle heat of a water-bath is useful during this mixing process, and a little benzol may be added at the end to compensate for what is lost by evaporation. Preserve the paste in a well-covered vessel. It should be noted that the quantity of solids in this paste is five in nine and a-half. It is, therefore, obvious that to prepare a 50-per-cent. mullplast a quantity of medicament must be added to the stock paste equal in weight to the solids in the paste. The solvent benzol is left out of consideration, as it completely evaporates after spreading the paste on the mull.

The most popular mullplasts are those containing salicylic acid, of which there is a series ranging in strength from 50 down to 10 per cent. The following formulas show how to arrange their composition:

50 per cent.	Parts by weight
Stock paste	9½
Salicylic acid, in fine powder ...	5

40 per cent.	Parts by weight
Stock paste	9½
Salicylic acid, in fine powder ...	4
Starch, in fine powder	1

20 per cent.	Parts by weight
Stock paste	9½
Salicylic acid, in fine powder ...	2
Starch, in powder	3

10 per cent.	Parts by weight
Stock paste	9½
Salicylic acid, in fine powder ...	1
Starch, in powder	4

The use of starch here is obvious. It is a simple, inert diluent, to maintain the correct strength of the paste.

A few words may be said with advantage concerning the action and uses of these pastes. The stronger ones are employed with great advantage for the removal of cuticle, and to assist the cure of lupus and other skin diseases. Dr. Unna, in his experiments, found that the stronger pastes, though very effective, caused much pain, therefore he sought for an anodyne to allay or prevent the pain. This he found in pure creosote, made from beechwood, of which he used 40 per cent., together with 20 per cent. salicylic acid.

The author gave a special formula for this paste, as it has to be dealt with on lines somewhat different from those above on account of the fluidity of the creosote:

Creosote ... 40 per cent.	Benzoated
Salicylic acid 20 per cent.	lard ... ... 2½ oz.
	White wax ... 1 oz.

Melt and stir in 2 oz. salicylic acid, 4 oz. creosote. Mix with 5 oz. of stock paste. Thoroughly incorporate these ingredients. After spreading, when sufficiently dry, it should be covered at once with gauze, rolled, and placed in well-closed tins. Another plaster mull in frequent demand is one containing 55 per cent. of metallic mercury.

MERCURY PLASTER MULL (55 PER CENT.).

Mercury	5 parts	Mercury ointment	1½ parts
Starch	1 part	Stock paste ...	5 parts

Add the metallic mercury to the ointment, mix thoroughly until the mercury is reduced to a fine state of division; then incorporate with the stockpaste and starch. If carefully made, this yields an excellent plaster mull, in which the mercury is very finely divided.

In conclusion, the author briefly described the spreading of plaster mulls. It can be well done on the spreading-machine devised by the late W. Martindale. This is an expensive machine beyond the needs of the ordinary pharmacist. The author exhibited a small simple spreader, which he had used for experimental work for many years; any carpenter can make it for a few shillings. This spreader is in the form of a trough with wooden ends, fixed to a wooden base, on the inner side of each of the two ends two grooves are cut, into which slide two metal plates. These plates and the bed of the trough must be planed dead true. All being ready, the mullcloth is placed on the bed of the machine under the plates. A metal gauge, which may be a strip of zinc, is placed under the front metal plate at each end. This raises the plate so as to give the required thickness of plaster. The paste is now placed in the trough: and the cloth pulled through. The plaster is now spread. To avoid disaster it is necessary to be very careful in handling the spread plaster. It should be hung to dry for at least twelve hours. A covering of muslin is placed on its surface to protect it. It is then ready for use.

On the labels of the German-spread plaster mulls it is customary to state the quantities of active ingredients which cover a surface 1 metre long by 20 centimetres wide—that is, one-fifth of a square metre. In the case of a 50-per-cent. plaster mull it is given as 20 grams. This method of labelling is evidently done to ensure uniformity by an even thickness of plaster, evenness of spreading, and regularity of action on the skin.

DISCUSSION.

MR. GAMBLE said there was no doubt that, when the war came about and the Hamburg supplies were no longer forthcoming, there was a hiatus which was not filled as quickly as it ought to have been by British manufacturers. He thought the proofing at the back and even

spreading of the plaster were most important elements in the manufacture, and there was no doubt that in the past the German make was far superior to the British, particularly in regard to the two points he had mentioned. They also kept well—for ten years or so. There was no doubt that these plaster mulls were very popular among dermatologists, and he believed they were to be supplied on a much more extended range of formulas than had been the case in the past. Personally, he thought the mulls should be made by manufacturers rather than by the pharmacist.

Mr. T. Maltby Clague differed from Mr. Gamble on the question of the mulls being made by the manufacturers rather than by the individual pharmacist. He thought the pharmacist could supply the prescriber with exactly what he wanted if the latter only left to him the selection of the media and machinery.

Mr. Deane pointed out the difficulty of retail pharmacists making the mulls themselves, owing to inability to obtain the small quantities of unvulcanised rubber required.

Mr. Pidd expressed the opinion that the formulas of Mr. Gerrard would not keep; he had not found a plaster that would keep twelve months with less than 20 per cent. of rubber. In one of the plasters he (the speaker) made be used nearly 30 per cent. of rubber. Para rubber was better for the purpose than plantation rubber. Washing raw rubber was a delicate process; if care were not taken the rubber would become hard and difficult to manipulate. He looked on these preparations more as ointments than as plasters.

Mr. Gerrard, replying to the discussion, said he always welcomed criticism. Personally, he did not mind what name was given to the preparations, so long as they were able to manufacture something which would keep their late antagonists and former competitors from coming here again and getting control of the business. He believed British pharmacists could do it; he had shown them how, and if they did not do it, it would be their own fault.

Mr. Gamble presented the next two papers, "The Detection of Inorganic Phosphate in Glycerophosphates"; and "Note on a Sample of Mutton-Bird Oil" which we shall print next week. This ended the proceedings of the Section.

Practice Section.

The Practice Section resumed at the Royal Institution at ten o'clock on Wednesday morning, Major E. Saville Peck occupied the chair, and called first upon Mr. J. L. Hirst to read his paper on

The Four Thousand Hours.

By J. L. Hirst.

Much has lately been said about post-graduate courses, but hitherto official pharmacy has had little to do with its undergraduates before they present themselves for the Qualifying examination. It has hitherto been the custom of pharmacists desiring apprentices to insert an advertisement in the local paper reading somewhat after this fashion: "Well-educated youth wanted as apprentice. Apply John Smith, chemist," or "Mr. Brown has a vacancy for a gentlemanly youth to train as apprentice," or even "Smart lad wanted at once as apprentice. Apply, etc." There is another avenue by which boys have entered the ranks of pharmacy, and that is the one traversed by the intelligent errand-boy. He was engaged to run errands, adapted himself to his surroundings, stayed on, made himself generally useful, and in the fulness of time blossomed forth as an unqualified assistant. Perhaps he had the courage to tackle the Preliminary examination, got his employer to sign an indenture, passed his Qualifying examination, and became a pharmacist. Instead of the casual advertisement seen in the local paper, and the accidental entry into pharmacy by the errand-boy portal, the author suggests that these different avenues of approach be merged into one broad official way—namely, through the local Association.

(1) Members of local Associations desiring apprentices, instead of engaging them in any haphazard way or waiting to be approached by parents, should give in their names to the secretary of the local Association, and state the conditions under which they are prepared to accept apprentices. The committee of the local Association, if it deems that the member is a fit and capable person to train a student or apprentice, should enter his name upon a register.

(2) The secretary of the local Association, when one or more members have been registered, could cause an advertisement to be inserted in a suitable local medium, setting forth the fact that there are certain vacancies in the district for the thorough training of pupils, stating briefly the conditions that govern the registration of apprentices or students, and that application must in the first place be made to him. Apart from achieving its object, the advertisement, if properly drawn up, should enhance both the dignity and prestige of pharmacy calling, and to some extent obtain the right kind of publicity. The secretary might endeavour to get in touch with the fine material which is being turned out of the secondary schools, by sending to headmasters of these schools the lists of vacancies in the locality. A certain amount of co-operation with the local education authorities would be beneficial. The local Association, having ascertained the number of vacancies suitable, should now thoroughly satisfy itself that the candidates are suitable for the vacancies, and should also be able to give both apprentices and employers a certain amount of choice. Moreover, it could, to a degree, control supply. There are no compulsory powers to make any scheme of limitation effective, but the council of an Association, if they saw that the supply was likely to be much more than the demand, could, from motives of self-interest and self-preservation, encourage applicants to put their sons and daughters to other callings.

(3) Having—shall we say?—by the means mentioned secured our pupils and placed them in suitable situations, they would then be enrolled by means of a special indenture peculiarly applicable to our calling, prepared by the Law Committee of the Pharmaceutical Society, a copy of which shall be kept by the guardian of the pupil, a copy by the master of the pupil, and the original in the possession of the secretary of the local Association. When the secretary has been satisfied that the term of apprenticeship has been duly completed, he will endorse a certificate to that effect upon the indenture and deliver the same to the apprentice. Mr. Hirst mentioned that this indenture scheme is being practised successfully by the Leicester and Leicestershire Chemists' Association with this exception, that the indenture is not drawn up by the Law Committee of the Pharmaceutical Society. In the author's opinion official pharmacy through the local Associations should, from the very beginning, be in touch with the pharmacist of the future, and the apprentice in his earliest years be taught to look to the local Association for guidance and future help, and through the local Association to the Pharmaceutical Society.

The Conditions of Systematic Instruction.

During his 4,000 hours, and before he sits for the first part of the Qualifying examination, the apprentice has to prepare to satisfy the Registrar of the Society that he has, subsequent to registration, received a systematic course of instruction in chemistry, 300 hours; botany, sixty hours; and physics, sixty hours. Now this represents a total of 400 hours, to be spread over a period of not less than two years. If the apprentice desires to complete his training in two years, it means that seven hours per week would be devoted to study—*i.e.*, taking the school year as thirty weeks. If he desires to complete his training in three years, a more suitable period, then, roughly, five hours per week would be required. On the basis of three years, two afternoons per week—say from 2 to 5 p.m.—of the employer's time would more than

meet the requirements and give a comfortable surplus of hours in case of illness, accidents, etc. The local Associations will have to make arrangements for suitable classes to be held for apprentices in local educational institutions approved for the purpose. However much we may deplore the fact, nevertheless it is true that the manufacture of most galenicals has gone over to the wholesale lock, stock, and barrel, more especially during the recent war, and it is for this reason that Mr. Hirst suggests that if it can be arranged a period of time during apprenticeship, or perhaps subsequent to it, should be spent in a wholesale laboratory. The local Associations could assure themselves that the time should be spent profitably. The author has spoken to wholesalers on this subject, and they assured him this position is a workable one, and some of them would be glad to undertake to instruct apprentices in the modern manufacture of galenicals, and in allied processes carried on in wholesale laboratories. With these advantages the apprentice of the future would be better trained than his predecessor, and would be better fitted to face both Part I. and II. of the Qualifying examination.

Mr. Hirst stated that in his opinion it is now the psychological time for us to set our house in order. After the recent devastating war men's thoughts are naturally turning to the problem of economic reconstruction, and with this problem the problem of education is inseparably bound up. If pharmacy is not to be overlooked, it must bestir itself and in educational matters prepare to march side by side with other callings, and so establish its claim to consideration.

DISCUSSION.

The CHAIRMAN, in opening the discussion, remarked that the paper was one well fitted for the Conference to discuss, and the Society's Council would welcome such criticism on the training for pharmacists. He was of the opinion that 350 apprentices was an underestimate of the number of apprentices required in pharmacy per annum, and that a four years' apprenticeship was too long.

Mr. DEAKIN said that the chairman was well qualified, as the result of his experience, to speak on such a subject as the training of pharmacists.

Sir WILLIAM GLYN-JONES spoke of the difficulty of enforcing conditions as regards students. The means by which some men at one time got on the Register were hardly creditable, but the Society has now definite control over the training to be given in schools of pharmacy. A great deal of useful information concerning the course of study had been forthcoming as the result of the recent examinations. The 4,000 hours should be spent in a shop under conditions which the Council should approve of, and the Society should have power to decline to allow pharmacists to take apprentices if the pharmacist was deemed unsuitable to train them. If, however, the training was made too expensive pharmacists were likely to economise on qualified men. The Ministry of Health has set up committees to examine what shall be the future functions of pharmacists. It will not be left to medical men and pharmacists to squabble over which plot of grass to walk on.

At this point Major S. Peck had to vacate the chair owing to an appointment at the University, and he was succeeded by Mr. W. F. Wells (Dublin), who invited Miss Buchanan to speak.

Miss BUCHANAN said there were cases where boy apprentices had been used chiefly as messengers and girls as packers and servers, but the new regulations would make this going on in an easy way no longer possible. The best sort of boys and girls would be needed to meet the requirements of the Ministry of Health. It hurt the best class of girl to be treated as a shop girl, and this fear discouraged some of the highest educated from entering pharmacy. The business side must be developed and a high moral standard upheld. Medical men regretted the loss of the apprenticeship system, and pharmacists should combine apprenticeship with university training.

Mr. RIGHTON (Southport) endorsed all Miss Buchanan had said.

Mr. S. HOGG (Belfast) suggested that the Pharmaceutical Society should draw up indenture forms, which members could buy. Too little time was given to the academic side of training.

Mr. HOGG (Belfast) thought pharmacists ought to be paid both for the waiting time and for the drugs which they never got rid of. Both for mixtures and pills, Irish pharmacists charged according to the cost to which they were put. In Ireland very little dispensing was done by stores. The prices of dispensing in Ireland had been nearly doubled, but there never was less complaint, as the people wanted good medicine and were willing to pay for it.

Mr. SIVERTSEN asked whether a census of unqualified men working in pharmacies might be taken, as a large number of these had only received training in a hospital during the war, and he considered that entrants to pharmacy should be limited to those who had been properly indentured.

The CHAIRMAN next called upon Mr. Barton to read his paper on :

Time as a Factor in the Cost of Dispensing.

After referring to the proposed scale of wages printed in THE CHEMIST AND DRUGGIST, July 17, p. 49, the author divided the cost of dispenser into (1) materials, (2) container, (3) value of time occupied. The time-value is calculated at the rate of 4*s*. an hour, and is followed by a list of average times occupied in the usual types of prescription. The dispensing turnover is estimated at 22 per cent. of the total turnover (there is no Insurance dispensing), and overhead expenses amount to 20 per cent. of the turnover. The item for wages does not include qualified assistance nor any allowance for the proprietor's salary.

DISCUSSION.

Mr. WALLBRIDGE (Liverpool) spoke condemning the old method of pricing prescriptions.

Mr. MAINE (Cork) mentioned the code system in use in Ireland, and suggested that it might with advantage be used in the British Isles.

Mr. SMALLEY (Ipswich) eulogised the paper, and also praised the work of Mr. C. T. Allen, whose conclusions have been published in THE CHEMIST AND DRUGGIST. He proposed that the Conference draft a resolution that the Local Associations Executive should arrange a scale of charges, and that a tariff would be more satisfactory than a code, owing to the varying of the price of drugs at the present time.

Mr. MARNS (Ealing) called attention to the higher charges necessary on account of the time factor.

Mr. HIGGS (Kingston-on-Thames) contended that the code was not applicable to England, as the dispensing of scripts was not confined to qualified men.

Mr. MARSH (Wallasey) agreed with Mr. Barton, but thought that, as the average pharmacist spends a lot of time doing nothing (laughter), this should also be counted in and charged for at full rate.

Mr. MILNER (S.E. London) congratulated the Conference on the whole of the practice papers, which he suggested should be discussed by the local associations. He agreed that the L.A.E. should set up a scale of dispensing, but the dispensing at a loss by stores must first be abolished by the stores being brought into line.

Mr. DEAKIN said it would be admitted by all that the time had come when improved means should be found for those who were coming into the craft. He feared the results of the most recent examination would not be all that was satisfactory. Bureaucratic control should cease and individual action be restored.

Mr. W. F. WELLS, in closing the discussion, pointed out that Irish pharmacists were in a much better position than those in England. The Irish pharmacists who had followed the old apothecaries had succeeded, by the Act of 1875, to their possession of the sole right of dispensing. He hoped the English pharmacists would obtain the same right. (Applause.) Medical men in some instances in Ireland could obtain the right of dispensing, but as a rule no Irish doctor of any standing would think of dispensing prescriptions. There was one point which he was glad to see the English pharmacists were working up to. For the last fifty years the Irish pharmacists' regulations had required that a four years'

apprenticeship must be served after passing the Preliminary examination. He thought that a great advantage. It was cruel to put any boy or girl to a business in which he or she would have little hope of qualifying later on. Besides insisting on the Preliminary examination, Ireland was a little better off than England with regard to a curriculum, Ireland having been in possession of a curriculum for the last twenty years. The Irish pharmacists passed a resolution a score years since requiring a curriculum, and the Privy Council embodied it in an Act such as had now been passed in England. He thought that England was wrong in not having insisted on a four years' apprenticeship, which should be served in a pharmacy where open shop was kept for the dispensing of prescriptions. He had had a young lady who held an English certificate as an assistant and who applied to him "to teach her some dispensing." (Laughter.) These things should not be. (Applause.) He agreed with insisting on higher education. It had been suggested that there should be an inspection of pharmacies to see whether they were fit to train apprentices in. In Ireland such an inspector would soon be shown the door—(laughter)—and it would require at the least an Act of Parliament to secure his status. He hoped English pharmacists would secure the sole right of dispensing prescriptions. (Applause.)

It was now suggested that, owing to lack of time, the remaining papers should be read in succession, and any remaining time devoted to discussion. Mr. Wallis then read his paper on

Keeping Open Shop.

By Hugh W. Wallis.

The greater success of pharmacists in "keeping open shop" and meeting public demands would be promoted by—(1) The institution of a business training by local Associations, to follow the pharmaceutical students' qualification, and rounded off by a business diploma. (2) The preparation by local Associations of reliable statistics for a pharmacist's use, such as percentage of turnover to salaries, overhead charges, unremunerative lines, etc. And (3) a correct view-point of his business as a whole by every business pharmacist, finally suggesting that the improved business type of chemist might favour and promote more strict control of pharmacies to improve the general standard and protect the efficient man.

Mr. Govier followed with his paper on

Packing Own Proprietaries,

his contention being that pharmacists must both make and pack high-grade preparations in their own pharmacies.

Discussion.

Mr. W. H. Saunders, referring to his recent experiences in his world-tour, said that in the United States own-name articles do not exist, as time is considered too valuable. Pharmacists prefer to hand down a proprietary article. The profit on such articles is much larger than in this country.

Mr. Harold Wyatt's was the last paper. It was well received by the members.

Is the Major Examination of any Value?

[abstract.]

At first sight Mr. Wyatt said it looked as if he was taking a very pessimistic point of view. Since he himself became a "Major" man he had not become a confirmed pessimist, but he had tended in that direction. When he passed the Major he had the right to put the letters "M.P.S." after his name, together with the men with the luck to have been born before a certain day, and afterwards he had the title of "Pharmacist" or "Pharmaceutist." Some men to-day had added the title "Major Pharmacist," and he began to fear, at one time, that his advantages as a "Major" man would disappear, and that the "Minor" man, having obtained the title of "Pharmacist," would get hold of the title of "Ph.C." But, happily, the sporting spirit of the "Minor" men proved to be such that they would not seek the "Ph.C." unless by study and examination they had a right to it by examination. Another way to look at the "Ph.C." was the business point of view. A common idea was that if there was a naturally-born babe a completely turned out fool it was the "Major"-examined man. (Much laughter.) Well, the "Majors" were a mixed lot. (Cheers and laughter.) Some were what a wholesale chemist would term a "spent marc." To some of the "Major" men the "Major" examination was their final kick. A long-suffering parent, with plenty of money, had told his son that he must show him something for all his expenditure, and in response the son had produced the "Major" certificate, and he was apt to become one of the men who loitered around in a "high-falutin'" way, and you could not could not touch him at the end of a long pole. (Laughter.) Those were the men who caused the "Ph.C." to stink in the nostrils of the average pharmacist. But essentially the "Major" man was no worse commercially because of his extra examination. His commercial asset was as great as that of a "Minor" man, *plus* the asset of the man who had given time to further reading and examination. The "Major" represented an added amount of good, all-round reading, but the preparation and examination for the "Major," as it stood at present, was little more, up to a point, than chaotic. He hoped the inquiry which was proceeding with the "Major" would go very carefully indeed with this matter. A curriculum for the "Minor" had been framed, though at one period any council who had proposed it would have been kicked out of Bloomsbury Square at the next election. Now, however, that curriculum was taken lying down; indeed, some young students almost rose up and embraced it. (Laughter.) Education, carefully graduated, would bring, in the future, a certain reward, and that reward would be that the English pharmacist would be able to hold his own with any Continental pharmacist, and even with the Teutonic variety, which had been crammed down the throats of the English pharmacist for years. The Englishman, among whom he included the Scot, the Irish, and the Welsh, had brains which would compare with those of any other being in the wide world. Moreover, Englishmen, he used the term in the wide sense, had the sporting instinct, were able, in short, to buck up to do anything, provided that they saw an end to it. The curriculum had come to stay, and as they had it for the "Minor" let them have it also for the "Major." In Bacteriology, for example, the pharmacist should be in the position to give a medical man the information he asked for by a direct question, or at least be able to tell him where to find the answer. Analysis was one of the weak features of the Food and Drugs Acts, a want of knowledge of the medicinal substance being displayed by many public analysts. The discussion of the "limit of error" in the joint paper sent from Salford, and read on the previous day, clearly showed what was done by the analysts with little knowledge, either of the customs of pharmacy or of their own duty. He looked forward to the day when the Ministry of Health would appoint as public analysts men who had passed the "Major" examination and had a special extra certificate under the Food and Drugs Act as men thoroughly qualified to undertake the duties of a public analyst. On the Continent the Englishman, good as he always was up to a certain point, could learn something even from a country so often too heavily discounted, such as Spain. In Spain the majority of the public analysts were pharmacists with special instruction in the analysis of foods and drugs. In France the same thing obtained, the French public analysts of poisons, foods, and drugs being the finest in the world. In France, if a pharmacist was convicted it was on the evidence of an analyst with a knowledge of the duties of the pharmacist's calling. Pharmacists, however, would never do much good with the Food and Drugs Acts until they put their own house in order. In conclusion, he urged pharmacists not to delegate their examination to any other body than the Pharmaceutical Society. (Applause.) "Do not," he pleaded, "let go our birthright again." (Loud applause.)

Discussion.

There was only a fragment of time left for discussion, during which time Miss Buchanan stated that all Mr. Wyatt's ideas are before the Council at present and the modifications will shortly be made public. There was accordingly no discussion.

Closing Session.

The closing session of the Conference was held immediately after the luncheon in the banqueting hall of the Exchange Station Hotel. Many of the members came in from elsewhere, and stood round the tables, at which about 350 were seated.

PRESENTATIONS.

The President made the customary presentation of books from the Bell & Hills Fund to the Liverpool Chemists' Association, and Mr. D. H. EVANS, who received them on behalf of the Association, referred to the fact that already they had a fine library at the Royal Institution.

In making a presentation to Captain H. Finnemore, an ex-secretary of Conference, the PRESIDENT said that in Captain Finnemore they had had a most valuable officer, and, though the gift was in no sense a measure of their appreciation of his services, they hoped he would accept it as a token of their whole-hearted esteem. (Applause.)

Captain FINNEMORE briefly acknowledged the gift.

ELECTION OF OFFICERS.

Mr. W. F. WELLS proposed the election of the following officers for the ensuing year :

President, E. Saville Peck.

Vice-Presidents, J. E. Connor, W. L. Currie, H. Finnemore, E. T. Neathercoat, E. White, G. Whitfield.

Hon. Treasurer, D. Lloyd Howard.

Hon. Secretaries, R. R. Bennett, C. H. Hampshire.

Hon. Local Secretary, E. R. Cross, Scarborough.

Other Members of the Executive Committee, C. T. Bennett, E. T. Brewis, C. E. Corfield, F. W. Crossley-Holland, H. Deane, F. W. Gamble, W. H. Martindale, A. R. Melhuish, H Skinner.

Auditors, W. F. Gulliver, F. C. J. Bird.

Referring to the President-elect, Mr. WELLS said that, in accepting the office of President, Major Peck would be honouring the Conference, and he congratulated Scarborough on the fact that it would have him as President at the next Conference. All the other officers-elect were men well known in the profession, and men who could be relied upon to do their utmost for its development and success.

Mr. W. H. SAUNDERS briefly seconded, and added that Major Peck did invaluable service during the war and was an ardent advocate of the present educational policy. In Mr. J. E. Connor, one of the Vice-Presidents-elect, they had a fine example of the shrewd, long-headed North of Ireland man whose services would be most valuable.

The resolution having been carried with enthusiasm, Major SAVILLE PECK, acknowledging the election of himself and other officers, said that, by a strange coincidence, the first time he attended Conference was at Liverpool in 1896, and it was an additional pleasure to him to have been elected to the Presidency at the 1920 Conference in that city. The work of the President was to see that the machine was kept running smoothly during his year of office, that adequate arrangements were made for the Conference, and to deliver a presidential address. He was sure he could rely on Past-Presidents, Vice-Presidents, and Executive to help him in regard to the first two duties, and, with regard to the presidential address, he jocularly remarked that he might call on the Ladies' Committee to decide the length, title, and phraseology of the address, in which event he felt sure they would have one that would suit everybody.



MAJOR E. SAVILLE PECK,
The New President.

INVITATION TO SCARBOROUGH.

Councillor GEORGE WHITFIELD, Scarborough, extended a formal invitation to the Conference to visit Scarborough next year. After the great success and lavish hospitality they had experienced at Liverpool, they in Scarborough felt some diffidence as to what they would be able to do there; but they were not disheartened, and promised the members of Conference a real Yorkshire welcome. Mr. Whitfield read a letter he had received from the Mayor of Scarborough offering the Conference civic hospitality and help.

Mr. CROSS, in a breezy speech delivered from a chair, said that the Scarborough local Committee would try to find the members of the Conference a landlady without a cat. (Loud laughter.) There were twenty chemists in Scarborough, but without the visitors there would be none. (Laughter.)

Mr. PARKER cordially supported the invitation, which, on being put to the Conference, was enthusiastically accepted.

Major SAVILLE PECK thanked Scarborough for their invitation, and expressed the hope that the attendance there would be a very large one.

THANKS TO LOCAL COMMITTEE.

Mr. E. WHITE, in proposing a cordial vote of thanks to the local Committee, said the Liverpool people had worked very hard to make the Conference a success, and he specially mentioned Mr. W. P. Evans, the Chairman of the local Committee; Mrs. A. W. Ashcroft, the Chairman of the Ladies' Committee; Mr. H. Humphreys Jones and Mr. W. J. Williams, the local secretaries; and Mr. C. Huxtable, the local treasurer.

Mr. THOMAS STEPHENSON seconded the vote of thanks, and said that Liverpool had proved herself to be second to no city in the Empire in regard to looking after her guests, however much they might question her right to that position in other respects. (Hear, hear, and laughter.)

The vote having been carried with acclamation,

Mr. W. P. EVANS said the local Committee deeply appreciated the kind things that had been said of them, and the best return for their services was the magnificent response which had been shown by the attendance at that Conference. Barring the Jubilee Conference in London, this year's Liverpool Conference had established a "record" for attendance. The speaker warmly acknowledged the services of Mrs. Ashcroft and other members of the Ladies' Committee, to whose efforts he attributed most of the success which had been achieved.

Mrs. ASHCROFT also acknowledged the vote, and said how delighted the ladies had been to have the opportunity afforded them of taking some part in the arrangements for the Conference.

THANKS TO THE PRESIDENT.

Mr. L. MORETON PARRY proposed a vote of thanks to Mr. C. A. Hill for his services as President of the Conference. Mr. Charles Alexander Hill was well known, and in London amongst wholesale and manufacturing circles he was regarded almost with reverence. His had been the divinity which shaped the beginning and now marked the end of the Conference, and the success of the gathering was a magnificent testimony to his ability. (Hear, hear.)

Mr. J. E. CONNOR, in seconding, said Mr. Hill's name was a familiar one in Ireland, and his opening address had fully justified the high reputation which he held throughout the country.

The vote was carried with cheers and musical honours, and

The PRESIDENT, in reply, said it had been a great pleasure and honour to him to be President of the Conference, particularly during this year, when they had had such a record gathering. During his year of office he had had the opportunity of making many new friends and of getting to know members of the local Association with whom otherwise he would not have been brought in such close contact. He most cordially thanked them for their generous appreciation.

This ended the proceedings of the Conference.

The Social Side.

If one were trying to give a friendly foreigner a sufficient idea of English social life—using the word "English" to cover the United Kingdom—one would manage to procure for him an invitation to such a function as the reception given by the Lord Mayor and the Lady Mayoress of Liverpool to members of the Conference on Monday evening, July 19. For many years past the Conference has been inaugurated with civic hospitality at one of the centres of learning or commerce, or both. Beginning with the inaugural meeting of 1863, the list is as follows:

Aberdeen, '85, '08
Bath, '64, '88
Belfast, '98
Birmingham, '65, '86, '06
Bournemouth, '95
Bradford, '73
Brighton, '72, '05
Bristol, '75, '03
Cambridge, '10
Cardiff, '91
Chester, '14
Dublin, '78, '01
Dundee, '67, '02
Edinburgh, '71, '92, '12
Exeter, '69
Glasgow, '76, '97
Hastings, '84
Leeds, '90
Liverpool, '70, '96, '20
London, '74, '00, '13, '15, '16, '17, '18, '19
Manchester, '87, '07
Newcastle, '63, '89, '09
Norwich, '68
Nottingham, '66, '93
Oxford, '94
Plymouth, '77, '99
Portsmouth, '11
Sheffield, '79, '04
Southampton, '82
Southport, '83
Swansea, '80
York, '81

The reception at the Liverpool Town Hall was unquestionably one of the most brilliant and distinguished that the oldest frequenter of the Conference can remember. After being received by the Lord Mayor and the Lady Mayoress, the guests distributed themselves among the magnificent suite of rooms on the first floor, where the art treasures evoked many admiring comments. One of these halls was devoted, during part of the evening, to a conjuring entertainment given by Mr. E. Kessen, whose clever illusions caused a continuous ripple of laughter. A small hall was set apart for dancing, and here the excellent Liverpool Police Band rendered invaluable service. Refreshments were served in the handsome Council Chamber and the adjoining crypt, and the arrangement of the tables left ample room for leisurely movement from group to group of friends. The gathering, with the possible exception of the jubilee reception in London in 1913, must have constituted a record in point of numbers. Among those present we noticed the two pharmacist members of the Liverpool City Council (Mr. Robert Herman and Mr. Edwin Thompson), the President of the Liverpool Chemists' Association (Mr. D. H. Evans), the President of the Southport Association (Mr. H. Barton), the President of the Wallasey Association (Mr. C. Wherly), the President of the British Pharmaceutical Conference (Mr. C. A. Hill), Mr. E. M. Holmes, Mr. T. H. W. Idris, and several other past-Presidents, the secretary of the Pharmaceutical Society of Great Britain (Sir William Glyn-Jones), and several members of the Society's Council. As the guests were leaving, cheers were raised, at the call of Mr. L. Moreton Parry, for the Lord Mayor and the Lady Mayoress.



Visitors leaving Cathedral Service.
Mr. R. Feaver Clarke in foreground.

* * *

The impressive service in the beautiful Lady Chapel of the new Cathedral on Tuesday morning, July 20, induced many ladies (and not a few male attendants) to return to view the buildings in process of erection. The party was received by the Archdeacon—a personal courtesy which was deeply appreciated.

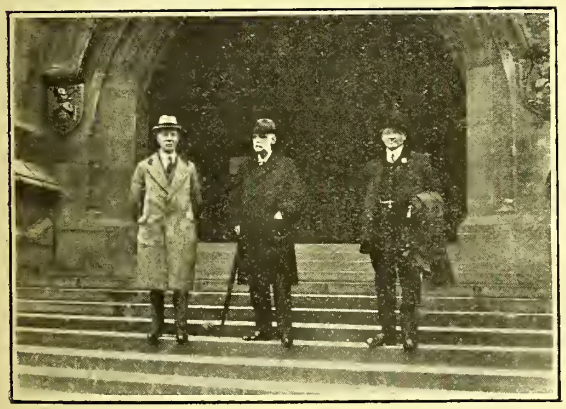
* * *

In the afternoon of the same day a large crowd made an adventurous journey on the overhead railway from the pierhead to inspect the Canadian Pacific liner *Minnedosa* lying in Sandon Dock. In spite of the Herculean efforts of the Ladies' Committee to herd the flock to the proper pasture there were a few strays. The spectacle of dignified and impeccable representatives of pharmacy anxiously questioning bland and polite members of the Dock Police for the whereabouts of a world-known Atlantic liner was an impressive one. It was an arduous journey, but it gave visitors an excellent idea of what Liverpool commerce really means. The liner is in dock, being painted, varnished, and reloaded, and courteous officers conducted parties in relays all round. The beautiful appointments of the vessel whetted the appetite of many of the visitors for ocean travelling, the opinion of most of the ladies being that if they could luxuriate in such sumptuous surroundings for even a week the slight fear of *mal-de-mer* would be no deterrent. To cap the company's generosity an elegant and much appreciated tea was provided, and parties straggled back to their hotels as they felt inclined, well satisfied—in fact, delighted—with what to the majority was a unique experience. Mr. Cleworth was accorded permission to take photographs on board, through the courtesy of Mr. W. A. Hickson, chief steward of the vessel.

* * *

The spacious banqueting-hall of the Exchange Station Hotel was full on Tuesday evening on the occasion of the dinner, and at least two rooms in addition were filled with Conference members. This arrangement resulted, after dinner, in the inhabitants of the smaller rooms coming round the tables in the hall, so that it is not possible for the faithful scribe to say exactly who, apart from the President (Mr. C. A. Hill) sat at the top table, but among those present there (or thereabouts) we noticed the Vice-Chancellor of Liverpool University (Professor Adami), the Ven. Archdeacon Spooner, the Presidents of the two Pharmaceutical Societies (Mr. E. T. Neathercoat and Mr. J. E. Connor),

Mr. William P. Evans, Dr. Symes, Mr. Henry Peet, Sir William Glyn-Jones, Mr. T. Edward Lescher, Mr. F. Ransom, Mr. W. F. Wells, Mr. E. M. Holmes, Mr. T. H. W. Idris, Miss Buchanan, Mr. F. W. Crossley-Holland, Major E. Saville Peck, Mr. H. S. Watson, Mr. John Cleworth, Mr. Herbert Skinner, Mr. Alfred Higgs, and Mr. J. Gilbert Jackson. Ladies were present in large numbers, and possibly formed the majority of the gathering. The Euterpean Orchestra played during the repast, which was of unusual excellence, and songs varied the proceedings after dinner. The singing of the National Anthem when the loyal toast was given had, for a few moments, a Straussian effect of discord, but those who stuck to the orchestra came off best, and carried their verse to a triumphant conclusion. The speeches were in the best of taste, and were listened to intently. Mr. D. H. Evans, President of the Liverpool Chemists' Association, led off with the toast of "The Pharmaceutical Society of Great Britain," which was responded to, after a flashlight photograph of the gathering had been taken, by the President of the Society, Mr. E. T. Neathercoat. Mr. Neathercoat gave a summary of the work of the Society during 1919, which, he suggested, would be remembered as the year in which the greatest advance had been made in pharmaceutical education and examination. Since last October the Society had aided 1,200 men, and would aid a similar number next October. The War Auxiliary Benevolent Fund had reached about 25,000*l*., thanks to the energy and eloquence of the Liverpool member of the



On the Steps of the Lady Chapel.
From left to right: Mr. J. M. Tallantyre, Mr. Henry Peet, M.A., Mr. John H. Robinson.

Council—Mr. Moreton Parry. (Applause.) The Pharmaceutical Society was not sufficiently well known, and the same remark applied to Ireland, the President of the Pharmaceutical Society of which he was glad to see present. Pharmaceutical leaders had been much too modest. Mr. Edmund White proposed the next toast, that of "The City and Trade of Liverpool," in a humorous speech, in the course of which he referred to a possible revenue from a tax on imports of hormones and vitamines. Mr. Edwin Thompson, of the City Council, made a brilliant response full of good things which we are strongly tempted to reproduce. Extolling the virtues of Liverpool, Mr. Thompson said that it might become the birthplace of a Shakespeare, a Rembrandt, a Darwin or even a Mary Pickford. Liverpool would not run dry—as regards water. (Laughter.) The Vice-Chancellor of Liverpool University also replied in eloquent terms, remarking that the University would do everything in its power for pharmacy, and wanted the help of pharmacy in return. The last toast, that of "The British Pharmaceutical Conference," was proposed in a delightful speech by Mr. William P. Evans, who said that Liverpool had been proud to renew their invitation issued during the war. The gathering was unquestionably successful, as was the Cathedral service with which it opened that morning—a service suggested by a local pharmacist. (Applause.) Mr. Evans, in coupling the name of the President with the toast, paid a high tribute to the authority and distinction of Mr. Hill's opening address to the Conference. Mr. Hill, who was received with great enthusiasm, described the function as a record gathering. While it was impossible to over-estimate the importance of pharmaceutical research, social intercourse was by no means the least important part of the activities of the Conference. Only by coming to know each other personally could we come to work for the common welfare.

* * *

The speech of the evening at the banquet on Tuesday was easily that of Councillor Edwin Thompson. It was full of the quaintest quips, and these were delivered with an air of portentous solemnity that was intensely amusing. One heard on all sides the desire expressed for more comic relief of this kind in the oratory. In this connection the President of the B.P.C. himself disclosed a new phase in his many-sided character. He exhibited, now and again, lightning flashes of a keen and caustic humour, which never missed fire.

* * *

The luncheons, held in the banqueting-hall of the Exchange Station Hotel, were quite aldermanic in their proportions. Fortunately, Conference visitors have healthy appetites. By degrees, even the shy members seemed to find their tongues, and the babel of conversation was exhilarating. The only toast was that of "The Duke of Lancaster," given by the President. This, it may be explained for the benefit of the uninitiated, is the form of the loyal toast in Lancashire. The subtle satire of Mr. William P. Evans's announcement concerning "all gentlemen whose duty it is to attend the Science and Practice Sections" was much appreciated by the ladies.

* * *

By the courtesy of the White Star Line, the members of the Conference and their lady friends enjoyed, on Wednesday afternoon, a two hours' trip aboard the *Magnetic* tender, which skirted both the Lancashire and Cheshire sides of the River Mersey estuary. The *Magnetic*, which had made but a trial trip by oil fuel, carried passengers by oil power for the first time. The excursion was keenly enjoyed, albeit the weather was dull and with slight showers, all the marine sights, including several great liners and the training-ships, being visible and passed at short range. Lavish hospitality in the shape of afternoon tea and ices was dispensed with a free hand, and picture postcards presented. At the call of Mr. J. McLanachan (Audley), the White Star directors were given three cheers for their courteous hospitality. In reply, Mr. Shelley (publicity manager for the White Star) said the directors had felt a real pleasure in entertaining the British Pharmaceutical Conference, the proceedings of which they had followed with great interest. It must be a joy to them to learn that one of the most happy recollections of Liverpool for the Conference would be this sail on the great commercial River Mersey. (Applause.)

* * *

Any casual visitor could see where the principal interest lay in the serious meetings. One had only to drop in first to the Science Section, where a select (but small) gathering discussed the higher aims of the craft, and then wander on to the Practice Section. The proportion of attendances was probably three to one in favour of the latter section. The papers there were (in the majority of cases) pertinent and practical, and the discussions were in every instance vital. The moral is preached in accordance with the point of view of the reader; but it is safe to say that the majority of the *habitués* of the Conference are pre-eminently practical men.

* * *

Among those who telegraphed apologies for absence was Dr. McWalter, Ph.C., Sheriff of Dublin.

* * *

That we are able to publish a few Conference photographs so expeditiously is due to the kindness of Thompson & Capper, Ltd., who placed their dark-room and photographic service at the disposal of Mr. Cleworth on Tuesday.

It soon dawned on most of the visitors that the members of the Local Committee must have worked like Trojans. In particular, the conveying of the party to Wales, involving as it did the preliminary carriage of all the food and other refreshment and of a tent, was a feat that, in all probability, has never been paralleled in the history of the Conference.

* * *

A word of praise, with extra marks, is due to the management of the Exchange Station Hotel for the expeditious service at the luncheons and the Conference dinner, when about 500 members sat down at the same time. No matter how great the infiltration, or osmosis, from other quarters, the meals in question were invariably served as smartly as any that we can remember.

* * *

Greatly daring, a leading member of the Scarborough fraternity began to distribute guide-books to that town immediately after the Conference had accepted Scarborough's invitation. It is understood that he just escaped with his life from the outraged Liverpudlians.

* * *

The smoking concert on July 21 was a great success. Mr. W. P. Evans presided, and there was a large attendance from all parts of the United Kingdom. Interesting features were presentations on behalf of the visitors to Mr. C. Huxtable, F.C.S., Mr. H. Humphreys Jones, A.I.C., Mr. W. J. Williams, A.C.I.S., Mrs. A. W. Ashcroft, Mrs. J. Bain, and Mrs. A. J. Ferriday in recognition of their services to the visitors. A collection was made on behalf of the Harrison Memorial Fund, which resulted in 52*l.* being added to the Fund.

* * *

The puzzles invented by a leading Liverpool pharmacist, and passed round the tables at luncheon, stimulated the brains, if not the digestions, of those who frantically tried to follow the demonstration that 1=2, or to decipher some of the appalling Latin reminiscent of the inscription in "The Pickwick Papers."

Who were There.

The following is a list of the visitors to the Conference who signed the attendance book:

Abraham, A. Clay, Liverpool
Abraham, T. Fell, Liverpool
Anderson, R., Sunderland
Ashcroft, A. W., Liverpool
Ashton, C. S., Brighton
Ashworth, T., Liverpool
Bain, J., Liverpool
Baker, T., Oldham
Barnett, A. H., Wiltshire
Bayles, H., London
Bayne, T., Edinburgh
Bennett, R. R., and Mrs., London
Blain, W. R., Bolton
Boorne, H. E., Bristol
Bramnall, R. T., and Mrs., London
Brinson, G., and Mrs., Birkenhead
Brinson, W., Mrs., Miss, and Miss G. P., Rock Ferry
Buchanan, Miss M. E., London
Caine, Mrs. J. C., Birkenhead
Chalmers, W., and Mrs., London
Chapman, W., London
Chester, C. H., Ansdale
Clague, T. M., Newcastle
Clarke, R. Feaver, Gravesend
Cleaine, J., Birkenhead
Cleworth, J., Manchester
Clubb, W. H., Liverpool
Cofman-Nicoresti, J., London
Collinson, A., Wallasey
Connon, B., Gt. Crosby
Connor, J. E., Dublin
Cook, W., Malvern, Natal
Cooling, F. C., Birkenhead
Cornwell, T. C., Hanley
Cowley, M. E., London
Cowley, T. N. B., London
Cross, A. E., Scarborough
Cross, E. R., Scarborough
Crossley-Holland, F. W., London
Cubbey, R., Blagdon
Cuxson, S., Birmingham
Davis, C., Leamington
Deane, E. W., and Mrs., Long Melford
Dixon, W. L., London
Dodd, Mary C., Wallasey
Edge, W. D., Wolstanton
Elder, Mr. and Mrs., Prenton
Evans, D. H., Liverpool
Evans, E., Wallasey
Evans, J., and Mrs., Cambridge
Evans, J. H., Gt. Crosby
Evans, W. P., Liverpool
Everington, F. E., Liverpool
Farrow, F. W., London
Finnemore, H., London
Fish, Miss, Manchester
Fisher, J., Glasgow
Fletcher, B. P., Liverpool
Fletcher, T. W., Liverpool
Foggan, G., and Mrs., Bedlington
Forbes, J., and Mrs., Perth
Franklin, J. H., Manchester
Fraser, A., Paisley
Gadd, H. Wippell, London
Garrow, Mr. and Mrs., Stirling
George, R. W., London
Gerrard, A. W., Birmingham
Gilmour, J. P., London
Glyn-Jones, Sir W., and Lady, London
Govier, R. G., and Mrs., Wallasey
Gutteridge, F. L., Liverpool
Hampshire, C. H., London
Hanna, V. E., Dublin
Hanson, A., Bradford
Hare, C., Southport
Harvey, J. W., Cork
Havard, A. M., London
Havard, H. L., London
Hay, W. F., Aberdeen
Higgs, A., and Mrs., Kingston-on-Thames
Hill, J. R., Edinburgh
Hodgson, W. Gill, Great Crosby
Hogg, S., Belfast
Horniblow, Miss K. N., Llandudno
Howard, D. Lloyd, Chigwell
Hunt, E., Liverpool
Huxtable, C., Liverpool
Jackson, J. S., and Mrs., Sheffield
Jensen, E. M., Wallasey
Jensen, H. R., Liverpool
Jones, A. J., Liverpool
Jones, C., Chester
Jones, H. H., Liverpool
Jones, M., Liverpool
Jones, T. Stephen, Rock Ferry
Keith, A. R., London
Lacey, W. J., Norwich
Lescher, T. E., London
Lloyd, Isaac T., Chelsea
Lomax, H., Liverpool
Macfarlane, M., Forfar
McInroy, J., Liverpool
Mann, E. W., and Mrs., Birmingham
Marns, J. L., Ealing
Marns, T., Ealing
Marsden, P., Liverpool
Marries, Mrs., Gt. Crosby
Marsh, O., Wallasey
Martindale, Dr. W. H., London
Meakin, W., Nottingham
Mills, A., Leeds
Milner, J., Greenwich
Naylor, F., Southport
Naylor, W. A. H., London
Nicholson, J., Liverpool
Noble, C. A., and Mrs., London
Nuttall, J. J., Staveley
Paley, J., Liverpool
Peck, E. Saville, Cambridge
Parker, Miss E., Scarborough
Parry, L. Moreton, Liverpool
Patridge, W. F., Liverpool
Patterson, R. S., and Mrs., Liverpool
Pescod, W., and Miss, Newcastle-on-Tyne
Phillips, S., and Mrs., Wolverhampton
Plattin, S. H., Nottingham
Pidd, A. J., and Miss, Manchester
Ransom, F., Hitchin
Richards, J. H., Birkenhead
Righton, J., Southport
Robinson, John H., Great Crosby
Robinson, P., Norwich
Scholes, W., Eccles
Shephcard, W. F. J., and Mrs., Chester
Shepperd, W. J., Barnstaple
Simpson, J. F., Felling-on-Tyne
Sivertsen, W. T., Swansea
Skinner, H., London
Smalley, C., Ipswich
Smiley, J. R., and Mrs., Manchester
Smith, A. N., Nottingham
Smith, G., and Mrs., Birmingham
Smith, John, and Mrs., Dublin
Smith, J. L., and Mrs., Southport
Smith, R., Stornoway
Solerman, A. H., Kew
Southernden, F., Exeter
Sparrow, Mr. and Mrs., Southsea
Spence, J., Elgin
Stelfox, J., Birkenhead
Stephenson, T., Edinburgh
Symonds, J. A., Ipswich
Tallantyre, J. M., Wallasey
Taylor, E. A. B., Wallasey
Thompson, C., and Mrs., Birmingham
Thompson, E., Liverpool
Walker, C. F., Manchester
Walsh, J. A., Dublin
Want, W. P., London
Watkinson, H. A., Farnworth
Watson, H. S., and Mrs., London
Wellings, W., Hoylake
Wells, W. F., Dublin
Welton, E. G., Wallasey
West, R. H., Southport
Wherly, C., Wallasey
White, E., and Mrs., London
Whitfield, G., Scarborough
Wigginton, J. H. B., Warrington
Williams, J., Manchester
Wilson, M., Wallasey
Wokes, G. T., Liverpool
Wood, J., Somerville
Wood, W. Frost, Nottingham
Woolley, E. J., Manchester
Wyatt, H., Bootle

Pharmaceutical Examination.—The Qualifying examinations pass lists have had to be held over until next week. There were altogether 414 persons added to the Register, whilst 588 have also passed Part I.

Maw's New Factory.—In referring to the new factory which S. Maw, Son & Sons, Ltd., are commencing at New Barnet (*C. & D.*, July 17, p. 61), we are informed that our remark as to the floor-space being 11,000 ft. may be taken to refer to the whole of the seven sections. The area mentioned was intended to refer to the one section now being built. The ground area of the complete factory will be approximately 100,000 sq. ft.

Trade Report.

42 Cannon Street, E.C. 4, July 22.

WITH the holiday season at its height and the continued tendency of prices to fall, business continues very restricted, and little of interest has transpired. Among the pharmaceutical group of chemicals reductions have been made in acetanilide, bromides, cocaine, guaiacol carbonate, methyl salicylate, paraldehyde, phenacetin, potash permanganate, resorcin, salol, and theobromine soda sal. Cream of tartar is lower, and tartaric acid is easier. Drugs continue quiet pending the auctions next week. Senega, balsams tolu and Peru, and peppermint oil are quoted at lower prices to arrive from the United States. Japanese refined camphor, menthol, and oil of mint have improved slightly. TN shellac declined about 20*s.* on the spot, but partially recovered. Turpentine is much dearer, but fixed oils generally have a continued downward tendency. Acetic acid is steady, and oxalic acid is easier.

Higher	Firmer	Easier	Lower
Linseed oil	Anise, star, oil	Acetanilide	Cocaine
Menthol	Camphor (Jp. ref.)	Canary-seed	Cottonseed oil
Turpentine	Cassia oil	Castor oil	Cream of tartar
	Mint oil (Jp.)	Citric acid	Ergot (c.i.f.)
	Patchouli oil	Citronella oil (Cey.)	Oxalic acid
		Cloves	Paraldehyde
		Coconut oil	Peppermint oil
		Coriander oil	Phenacetin
		Coumarin	Platinum
		Cumin-seed	Potash bromide
		Farina (Jp.)	Resorcin
		Fennel-seed	
		Guaiacol carb.	
		Lemongrass oil (forward)	
		Methyl salicylate	
		Musk xylol	
		Pepper (black)	
		Safrol	
		Salol	
		Shellac	
		Soya-bean oil	
		Terpineol	
		Tartaric acid	
		Theobromine soda sal.	

The Drug Auction will be held next Thursday, July 29.

Cablegram.

NEW YORK, July 21.—Business is fair. Menthol has declined to $6.00, and American peppermint oil in tins to $7.00 per lb. Mexican sarsaparilla has been reduced to 48c., and senega to $1.60. Balsam tolu is lower at $1.10, and balsam Peru has declined to $5.00 per lb. The following chemicals are all cheaper: Phenacetin $2.45, antipyrin, $5.50; hexamine, $3.50; citric acid, 82c.; refined camphor, $1.40; and acetanilide, 63c. per lb.

ACETANILIDE remains plentiful on the spot, and the price is somewhat easier at from 3*s.* 9*d.* to 3*s.* 11*d.* The U.S. price has declined to 53c. per lb.

ACETIC ACID.—Glacial has been in fair demand at 125*l.* per ton in glass carboys; 80-per-cent. pure is steady at 90*l.* to 95*l.* per ton.

ALOES.—Eleven kegs of East Indian and 100 boxes Curaçao aloes have arrived at the Cutler Street warehouses.

AMBERGRIS.—For a parcel of genuine grey to brownish various-sized pieces in first hands, just imported, and weighing from 50 oz. to 60 oz., about 80*s.* per oz. would be accepted. The *Sargossa* from Dominica has brought three cases.

AMIDOL is steady at 13*s.* 6*d.* per lb.

ANISE is slow of sale but unchanged in price at about 87*s.* 6*d.* per cwt. for ordinary Russian and Spanish.

ANTIMONY.—The supply of crude is rather light, and holders are firm at about 42*l.* per ton on the spot, while c.i.f. terms range from 41*l.* to 42*l.* English remains at the fictitiously high level of 60*l.* to 62*l.* as quoted by first hands, but business is possible at less, while foreign parcels can be had at about 50*l.* delivered f.o.r. Mining operations in China are still at a low ebb.

ASPIRIN is easier at from 5*s.* 2*d.* to 5*s.* 6*d.* per lb. on the spot, as to quantity.

BENZOIN.—Arrivals at the drug-warehouse comprise 150 cases Sumatra and 100 cases Palembang.

BROMIDES.—The potassium salt is offered from Germany at prices below cost of production—viz., 33m. per kilo. At the moment there is no demand from consumers, London spot prices varying from about 2*s.* 7*d.* to 2*s.* 9*d.* per lb. for crystals or granular. Sodium is quoted a little easier at 3*s.*, and ammonium is 3*s.* 6*d.* per lb.

BUCHU.—Arrivals valued at 4,660*l.* have taken place to London from the Cape. The exports from the Union of South Africa during March 1920 amounted to 17,713 lb. (7,201*l.*), against 42,438 lb. (9,106*l.*) during March 1919; for the three months ended March 31, 1920, the exports were 36,357 lb. (14,985*l.*), against 64,026 lb. (12,853*l.*) for the corresponding quarter of 1919.

CADMIUM.—The higher terms quoted represent chiefly the enhanced cost of import from America on the lower rate of the sterling. There is a fair demand at around 6*s.* 9*d.*, and sellers ask up to 7*s.* per lb.

CAMPHOR (REFINED) is firmer, with spot sales of Japanese 2½-lb. slabs at 7*s.* to 7*s.* 3*d.* per lb., and for July-September shipment 6*s.* 6*d.* c.i.f. is quoted. The exports from Japan during April amounted to 70,046 kin, valued at 418,601 yen. During the four months ended April 30 they were as follows:

To	1918 Kin	1919 Kin	1920 Kin
British India ...	202,746	4,555	259,320
Great Britain ...	189,868	29,711	63,732
France	8,845	41,813	17,002
United States ...	267,329	654,052	56,579
Canada	37,277	45	6,518
Other Countries ...	69,379	35,894	31,509
Kin	775,444	773,070	414,660
Yen	1,470,614	1,998,112	2,316,821

CANARY-SEED is in little demand, and quotations are slightly easier at 135*s.* to 175*s.* per quarter for ordinary to good Morocco.

CARAWAY-SEED is steady at 40*s.* per cwt. for good Dutch on the spot, and stalky Morocco at 25*s.*

CASTOR OIL is easier. English pharmaceutical quality offering at 81*l.*, first pressing at 78*l.*, and second pressing at 72*l.* per ton, barrels included.

CINCHONA.—At the London auction on Tuesday 813 packages offered, and only a small part was disposed of. Of 254 bales and 2 cases East India, 113 sold, including Ledgeriana stem and chips, 1*s.* 6*d.* to 1*s.* 8*d.* hybrid, branch 1*s.* 3*d.*, root 1*s.* 3*d.*; Succirubra stem 1*s.* 11*d.*, chips 1*s.* 10*d.* to 1*s.* 10½*d.* Of 151 bales West African (St. Thomé), 82 sold, broken quill and chips sold at 1*s.* 11*d.* to 1*s.* 11½*d.* Of 122 bales Calisaya, 7 sold at 1*s.* 10*d.* for broken quill and 1*s.* 8*d.* for country damaged.

CITRIC ACID.—The nominal price is 5*s.* per lb., but offers are current at slightly less.

CLOVES are weak and easier, Zanzibar offering at from 1*s.* 3*d.* to 1*s.* 4*d.* per lb. on the spot. Penang are also slow and offered more freely.

COCAINE.—Writing before the Amsterdam auction on Wednesday, it is anticipated that, owing to the large quantity of Java coca-leaves offered, prices will be again lower. On the other hand, Java exports are lighter again, and this may offset the decline somewhat. Cocaine hydrochloride can be bought at under 35*s.* per oz. in quantity on the spot.

COPPER SULPHATE.—The export demand continues disappointing, and some of the makers are cheap sellers at about 45*l.* per ton f.o.b. Liverpool, in casks, less 5 per cent., in spite of the considerably increased cost of bar copper, the tendency of which is still upward. The fact is worth noting that considerable quantities of rough bars are now being shipped to Italy for sulphate-makers in that country, where the output of this product is undoubtedly further increased. The Italian demand for English sulphate, of course, is non-existent.

Coriander-seed.—Small sales of sound Morocco have been made at 16*s.* 6*d.* per cwt., being steady.

Cotton Oil.—Prices have declined substantially during the last few weeks, due to poor buying, both of the product as well as raw material, the receipts of which have increased materially. Edible qualities find a fair outlet, but this is not sufficient to counteract the weak feeling. Shipments from Egypt and India are more regular, and large stocks are held at Hull. In London crude Bombay is quoted at 50*l.*, Egyptian crude at 60*l.*, and deodorised at 75*l.* per ton spot.

Cream of Tartar is lower, 99-per-cent. powder offering at from 270*s.* to 275*s.* per cwt., in the spot.

Creosote (Beechwood).—B.P. quality is offered at from 9*s.* to 9*s.* 6*d.* per lb., according to quantity and packing, and for creosote ex wood U.S.P. 5*s.* per lb. c.i.f. is quoted for prompt shipment.

Cumin-seed is easier at 37*s.* 6*d.* per cwt. for ordinary Morocco, but good sifted is held for 42*s.*

Dill-seed is steady at 15*s.* to 16*s.* per cwt. according to quality.

Dragon's Blood.—During the auction interval seventeen cases reboiled Singapore lump and ten cases Zanzibar drop have arrived at the Cutler Street drug-warehouse.

Egg Products are steady. Chinese liquid hen yolk has been sold at 72*s.* 6*d.* per cwt. on spot; for August-September shipment 76*s.* c.i.f. has been paid. Dried whole native on spot is 9*d.*, and sprayed whole egg 1*s.* 9*d.* per lb. Dried yolk is 9*d.* Hen albumen has been sold at 4*s.* on the spot, which price has also been paid for July-September and August-October shipment on c.i.f. terms.

Ergot.—The fact that Spanish exporters have come forward with much lower offers has had the effect of frightening buyers. Various quotations are current, ranging from 12*s.* to 13*s.* 6*d.* per lb. c.i.f., according to shipper. The spot price is about 28*s.* for small parcels.

Farina is slightly easier, No. 1 Japanese offering at 27*s.* per cwt. on the spot, and afloat at 26*s.* c.i.f. Sweet potato-flour is 26*s.* 6*d.* spot.

Fennel-seed is quoted at 34*s.* per cwt., but sales have been made at a little under.

Fenugreek-seed is quieter but firm at 11*s.* to 12*s.* per cwt. according to quality.

Formaldehyde is steady and, if anything, has a firmer tendency in view of the strong position of wood alcohol. The spot price is about 340*s.* per cwt. in barrels.

Gentian is quiet at about 60*s.* per cwt. on the spot, and rather lower to arrive.

Ginger.—All descriptions continue quiet, common to dull sorts of Jamaica offer at from 185*s.* to 190*s.* per cwt., but fine remains scarce. Wormy Cochin is still in large supply and pressed for sale, washed offering at from 55*s.* to 62*s.* 6*d.* per cwt. New sound Calicut is offered at 80*s.* to 85*s.* Japanese is 60*s.* on the spot, and Sierra Leone 63*s.* in Liverpool.

Guaiacol Carbonate is the turn cheaper, importers offering at from 27*s.* to 28*s.* per lb.

Ipecacuanha.—Arrivals at the Cutler Street drug-warehouse since the auction interval comprise fifty-five bales Matto Grosso and six bales Cartagena. The *Holbein* has brought fifty-eight bales from Monte Video to Liverpool.

Lead Products.—There is still no change to report, whether in regard to oxides or white lead, the quotations for which are the same as fixed early this month. The question of a revision has been under consideration lately, but action is deferred, while the price of raw material has not altered much on balance. The lack of labour has tended to hinder the home output of white lead, and makers, being in arrears with their contracts, especially for export, this has caused our imports from America this year to increase by leaps and bounds. Our total imports for six months were 139,608 cwt., against only 27,669 cwt. in the same period of 1919.

Linseed Oil.—There can be no question of stability for some time yet, and trading continues largely speculative, although crushers complain that prices have been knocked down unduly compared with the cost of linseed. The feeling amongst consumers is that deflation must go some considerable distance yet in order to induce them to stock up. Buying is kept down to absolute needs, but the seed-market is uncertain, while shippers are more reserved. London spot closes at 77*l.* naked and Hull spot at 72*l.* 10*s.* per ton naked.

Lycopodium sells at 14*s.* 6*d.* per lb. in small lots on the spot.

Menthol is firmer, but quiet, with Kobayashi-Suzuki offering on Monday at 27*s.* 6*d.*, but on Wednesday sellers were asking 30*s.* per lb. for single cases. The exports from Japan during April amounted to 69,253 kin, valued at 1,988,086 yen. During the four months ended April 30 they were as follows :

	1918	1919	1920
Kin	92,951	75,213	136,622
Yen	529,866	631,341	2,998,699

Methyl Salicylate is easier, drums offering at 4*s.* 3*d.* per lb. and smaller quantities up to 5*s.* per lb.

Milk-sugar is unchanged at 180*s.* to 190*s.* per cwt. for finest Dutch, according to quantity.

Nutmegs have been selling more freely of late at steady prices, particularly Singapore and Penang, at from 11*d.* to 1*s.* 3*d.* per lb., as to size. West Indian are in small supply, without demand.

Olive Oil.—The quotation of 17*s.* per gal. given in our issue of July 3 should have referred to a pure commercial Spanish oil slightly under 10 per cent. acidity and not suitable for edible purposes. The value of edible French ranges from 21*s.* 6*d.* to 25*s.* per gal., and oil suitable for pharmaceutical purposes, 20*s.*

A recent Tunis report states that a copious rainfall has improved the olive crop, and the prospects of the oil harvest are considered satisfactory.

Oxalic Acid is slightly easier at from 2*s.* 6*d.* to 2*s.* 7*d.* per lb.

Paraldehyde is about 6*d.* per lb. lower, importers offering at from 4*s.* 6*d.* to 5*s.* per lb. on the spot, as to quantity.

Pepper.—*Black* Singapore is easier with spot sellers at 5¾*d.* to 6*d.* per lb. To arrive, August-October and October-December, is quoted at 6⅜*d.* c.i.f. Lampong is 6½*d.* Tellicherry 7¼*d.* and Alleppy 6½*d.* per lb. on the spot. *White* Muntok is firmer at 11¾*d.* spot, and for August-October shipment 11½*d.* c.i.f. has been paid. *White* Singapore is 11*d.* spot, and August-October shipment 10¾*d.* c.i.f. d.w.

Phenacetin is again cheaper, with spot sellers at from 15*s.* to 15*s.* 6*d.* per lb.

Pimento.—At last week's lower price of 4*d.* per lb. demand is quite retail.

Platinum was recently reduced to 380*s.* per oz. and scrap to 240*s.* to 245*s.* per oz.

Quicksilver.—There has been no giving way, and current supplies appear to be well absorbed at prices ranging from 20*l.* 10*s.* to 21*l.* per bottle. There is a fair home demand, although not much business is reported for overseas markets. Italian supplies are restricted, but the near future should see more ample arrivals from the chief Continental sources. Having regard to the future course of the market, and whatever increase may be secured in production either in Spain or Italy under the high prices, the fact has to be noted that there is a constant fall in the output in the United States. This amounted to only 4,809 flasks for the first quarter of this year, which is by far the lowest return recorded for a long time past. While last year's returns already indicated a big setback against 1918, the figures given above for this year's first quarter denote a deficit of 852 flasks against the last quarter of 1919, and of 1,226 flasks compared with the same period last year. Since the close of the war the American output has been pretty well cut in half. Several of the American mines are apparently virtually exhausted, and the small output must thus in time call for more important imports to the States from Europe.

Resorcin.—Attention may be called to the fact that there is a considerable quantity of poor so-called medicinal quality on the market of German origin. Best white crystals can be bought at 23*s.* per lb.

SAFFRON.—B.P. is unchanged on spot, with finest Valencia qualities offered at 70*s.* per lb. down to 62*s.* for lower grades.

SALICYLATES.—English makers of salicylic acid quote 3*s.* 6*d.* per lb., and several are not keen sellers unless they can obtain this figure; dealers offer at slightly less. Sodium salicylate is steady at 4*s.* 6*d.* for crystals and 4*s.* 3*d.* for powder from leading sources.

SALOL is easier at from 5*s.* 6*d.* to 5*s.* 9*d.* per lb. for crystals on the spot.

SARSAPARILLA.—Among the arrivals at the Cutler Street drug-warehouse are 13 bales grey Jamaica, 20 bales native red Jamaica, and 20 bales Mexican.

SHELLAC.—The spot market for TN early in the week showed a decline of about 20*s.* per cwt., touching 670*s.* for usual standard quality TN, but on Tuesday there was a slight recovery to 675*s.*; fine Orange TN is 875*s.*, pure Button 925*s.*, cakey AC Garnet 590*s.*, GAL 550*s.*, and IG 510*s.* Futures have been quiet, with sellers of August at 645*s.*, and sales of October delivery at 570*s.* to 540*s.* per cwt.

SILVER NITRATE.—The price on July 21 was based on a metal value of 55½*d.* per oz., and is as follows: In quantities of 50 oz., 3*s.* 3½*d.*; 100 oz., 3*s.* 3*d.*; 250 oz., 3*s.* 2½*d.*; 500 oz., 3*s.* 2*d.*

TARTARIC ACID is slightly easier at from 3*s.* 2*d.* to 3*s.* 3*d.* per lb.

THEOBROMINE.—Soda salicylate is slightly easier at 26*s.* per lb., and pure theobromine is 42*s.* 6*d.* to 45*s.* per lb.

THYMOL.—British makers are selling their output steadily at 45*s.* per lb.

TURPENTINE.—The position is altogether abnormal for the time of year. Squeezing tactics on this side have helped in forcing up prices again at the expense of consumers, although it must be conceded that the warehouse stocks have suffered a notable contraction this month. This is due to comparatively small arrivals, and American manufacturers have been much hindered in their operations through the railway congestion. The demand for spirit was temporarily severely checked, which caused the American price to fall materially recently, but the latter since has rallied considerably. Developments will be watched closely in view of the increased Continental production and the consequent increased competition from France and Spain at the inflated prices. Spot spirit is again at a big premium, from 181*s.* to 195*s.* to 180*s.* having been paid, and forward speculative purchasers have thus been tempted, the sales including July-August at 164*s.* 6*d.*, July-December at 150*s.* 6*d.* to 158*s.*, and September-December 143*s.* to 152*s.*

ZINC OXIDE.—The demand from consumers is spasmodic, despite the recent concessions, but it seems probable that the tendency will be upward at no distant date, due to the rally in raw zinc. In spite of the embargo on imports of high-grade oxide for the benefit of home makers, our total imports of zinc oxide for six months (January-June 1920) were 4,994 tons, compared with only 1,231 tons for the same period last year.

Essential Oils Market.

NO ONE seems to expect any decided improvement in the present stagnant condition of business until the holiday period is over, but some dealers vouchsafe the opinion that conditions have seldom if ever reached the ruling state of depression. Strong holders have in many cases withdrawn, but there are few buyers at any price. Star anise has remained steady, but cassia, Japanese mint, and patchouli oils have shown a slightly firmer tendency. Ceylon citronella is easier, and coriander is receding in the face of improved supplies. Lemongrass is neglected, and lower quotations for forward delivery do not seem to be tempting. Peppermint oils are lower. Prices for aromatic and synthetic chemicals continue to show considerable irregularity; but coumarin, safrol, terpineol, methyl salicylate, and musk xylol appear to be moving in buyers' favour.

ANISE (STAR) is steady, with "Red Ship" brand offering at 4*s.* per lb., and for July-September shipment 3*s.* 8*d.* c.i.f. is quoted.

BERGAMOT.—On spot there is no further change in prices, with second-hand sellers offering about 36*s.* per lb. for 37-38 l.a. Importers, however, are inclined to hold for better prices.

CANANGA is quoted variously at 24*s.* 6*d.* to 25*s.* 6*d.* per lb. on spot.

CARAWAY.—Bids of 10*s.* per lb. c.i.f. for crude are stated to have been refused. On spot 11*s.* is about the price, and 12*s.* is given for rectified.

CASSIA, which reached 7*s.* 6*d.* per lb. last week for 80 to 85 per cent. c.a., has shown a slightly firmer tendency at 7*s.* 9*d.* to 8*s.*, according to quantity.

CEDARWOOD.—A better demand is reported, with spot sellers at 3*s.* 6*d.* per lb.

CITRONELLA.—Ceylon is weaker at 3*s.* 2*d.* per lb., and even 3*s.* has been mentioned. A pure oil is quoted at 3*s.* 4*d.* Java is steady at 5*s.* 6*d.* to 5*s.* 9*d.* Exports form Ceylon for the week ended June 14 amounted to 16,374 lb.

CORIANDER.—The seed has been declining steadily for some time, and while spot holders quote about 150*s.* per lb. for oil forward offers have been made at considerably under.

GINGERGRASS.—Spot lots are quoted at 21*s.* per lb. for prime quality of the "insoluble." There is said to be a fair amount of inferior oil offered at present.

LEMON.—There is practically no change in the spot situation at from 6*s.* 6*d.* to 7*s.* per lb. Forward quotations show considerable irregularity. A report from Palermo, dated July 14, states: Our market has remained as last reported, with practically no business, and entirely nominal figures. Demand is lacking, and consequently holders have been unable to realise the prices which they have been asking. On the other hand, however, it is impossible to buy at prices such as would make export business possible. It depends entirely on the development of the demand from abroad as to whether holders will have to give way and accept lower figures.

LEMONGRASS.—There is very little demand on spot, and c.i.f. quotations have been made at 7*d.* per oz. for new crop Cochin. Spot is unchanged at 1*s.*

MINT is slightly firmer, Japanese dementholised offering on the spot at 8*s.* 9*d.* to 9*s.* per lb. for Kobayashi-Suzuki, and to arrive 6*s.* 6*d.* c.i.f. has been paid. July-September shipment has been sold at 6*s.* 3*d.* c.i.f.

ORANGE has been in better supply, with Calabrian quoted about 45*s.* per lb. for spot and to arrive about 36*s.* c.i.f. The spot value of West Indian is in the neighbourhood of 40*s.*

PALMAROSA is quiet, with spot sellers quoting 25*s.* to 26*s.* per lb., according to quantity.

PATCHOULI.—Higher prices have been quoted this week, due to scarcity of supplies and improved interest on the part of Continental buyers. The spot price is about 88*s.*

PEPPERMINT.—American "Wayne County" is lower for spot at 38*s.* to 42*s.* per lb., according to quantity. Italian from Mitcham plants is lower on spot at from 45*s.* to 50*s.* per lb. For Mitcham oil 120*s.* per lb. has been given as the price, but it appears that sellers at 100*s.* can still be found.

ROSEMARY.—Spanish is offered to arrive at 5*s.* 6*d.* to 6*s.* per lb., according to seller, with spot offers unchanged at 6*s.* 3*d.* New crop French oil is offered on spot at 13*s.*

SPIKE.—French is unchanged on spot at 15*s.* to 16*s.* per lb. For Spanish 12*s.* is quoted.

WORMSEED is said to have sold at 50*s.* to 55*s.* per lb., according to quantity, and 55*s.* per lb. is quoted for forward.

Aromatic and Synthetic Chemicals.

AMYL SALICYLATE is firm at 10*s.* per lb. COUMARIN is slightly easier, with sellers willing to accept 32*s.* per lb. on spot. To arrive is quoted at 32*s.* 6*d.* c.i.f. MUSK AMBRETTE is offered about 330*s.* per lb. on spot; XYLOL is in better supply on spot at 41*s.* 6*d.* to 45*s.* 6*d.*, and for KETONE 100*s.* to 110*s.* is wanted. SAFROL has been in fair demand lately, with 5*s.* 3*d.* to 5*s.* 6*d.* quoted for spot quantities. TERPINEOL is easier at 6*s.* to 6*s.* 6*d.*, according to seller.

The following are recent arrivals: Aubepine (Holl.), 620*l.*; benzaldehyde (Switz.), 42*l.*; coumarin (Switz.), 169*l.*; geraniol (Holl.), 915*l.*; heliotropin (U.S.), 1,265*l.* (Switz.), 72*l.*; methyl anthranilate (Holl.), 157*l.*; methyl salicylate (U.S.), 120*l.*; musk xylol (Holl.), 1 case.

Indian Lac and Lac Substitutes.

In view of the present high price of Indian shellac several inquiries have been received at the Imperial Institute as to the possibility of utilising some of the synthetic resins in place of shellac for particular purposes. It is stated that one American gramophone company is now making record discs without shellac. This procedure is also being considered by another large company. From inquiries made by the Imperial Institute it would appear that several firms in this country are making synthetic resins, some of which can be used as substitutes for shellac for certain purposes. It seems probable that the use of these products will extend owing to the almost prohibitive price of Indian shellac.

Correspondence

Birr Union Drug Contract.

Sir,—I beg to contradict the statement appearing in The Chemist and Druggist of July 10 (p. 51), namely, that "the clerk said he wrote six letters to the contractor (Mr. Goldon)," complaining of shortage of medicines—this is not true. The shortage was exceedingly small, and appears to have been unavoidable. Kindly rectify the mistake.

I am, Sir, your obedient servant,

Birr. F. R. B. Kennedy.

Insurance Dispensing.

Sir,—I see that Dr. Addison has stated that the balance in hand from National Insurance to date is a matter of 66,000,000*l.* Is it not time that the Local Associations Executive or the Pharmaceutical Society used their influence to obtain for the chemists the balances of the 1913 and 1914 accounts (in my case over 100*l.*), or are we to write this off against the titles that have been conferred on members of the craft?

Yours, etc.,

Justice. (19/7.)

Wages in Pharmacy.

Sir,—The particulars of the proposed wages standard for assistants (*C. & D.*, July 17, p. 49), while satisfactory in many respects, contains (unless there be some explanation) something in the nature of an ambiguity. According to the table the minimum for a manager of a business, weekly turnover 35*l.* or less, is to be 5*l.*, while qualified men (not managers) are to receive, if twenty-eight years of age, 8*l.* 5*s.* What of the managers above twenty-eight years of age (and there are many) who run quite profitable branches at from 20*l.* to 30*l.* weekly turnover? Surely the Drug Union cannot mean that such men are to go on the scale at 5*l.* per week. Perhaps the idea is all qualified men above twenty-eight to receive a minimum of 8*l.* 5*s.*, but there is nothing in your particulars to sustain this hope. Of course, a business doing 20*l.* to 30*l.* at present would require, by readjusted prices under the new scheme, to rise to 40*l.* or 60*l.*, so as to yield the necessary profit, but even then the manager would seem to be paid less than the assistant. If you could make this seeming anomaly clear now it would save much needless controversy later; and the less controversy in all reforms, the better for all concerned. Yours truly,

Scotus. (17/7.)

The Dangerous Drugs Bill.

Sir,—It is always difficult for the lay mind, and frequently for the legal one, to interpret the exact meaning of legislative enactments, but the new amendments if added to the Dangerous Drugs Bill certainly seem to place the pharmacist in a more favourable position than he would have been in the Bill as at first printed. Even now these amendments require to be read carefully; I take it that it is proposed that any registered pharmacist carrying on his legitimate business would automatically be an authorised person under the Act without any further application or formalities. The section which would provide for the withdrawal of the authorisation as a penalty, in the case of a pharmacist, might be tantamount to withdrawing his qualification, as by refusing him the sale of preparations of cocaine, opium, etc., he would be prohibited practically from carrying on a dispensing business or for contracting on the Insurance panel. When a Standing Committee fixes three distinct hours for a sitting, one after the other, without a quorum being obtained on such an important matter as this Bill, tho so-called apathy of the electors becomes undue hustle compared to that of the legislators.

Yours faithfully,

Fleciorate. (20/7.)

Miscellaneous Inquiries.

When samples are sent particulars should be supplied to us as to their origin, what they are, what they are used for and how. We do not undertake to analyse and report upon proprietary articles nor to publish supposed formulas for them.

O. H. (12/7).—Removing Silver-nitrate Stains.—There is considerable risk of injuring the skin of the face in any attempt to remove silver nitrate stains. Cautious trial on a small patch might be made with tincture of iodine applied overnight, and followed in the morning by a strong solution of sodium hyposulphite.

C. H. (12/7).—Sodium Hyposulphite acts as a purgative in doses of sixty grains, but is not credited with any special action in destroying or removing intestinal worms. For animals the doses are: Horse, ʒj.-ʒiss.; cattle, ʒij.-ʒiv.; sheep, 5ij.-5vj.; pig, 5ij.-5vj.; dog, gr. xx.-lx.

W. B. (6/7).—The nuts you send are the ripe fruits of *Terminalia Chebula*, N.O. *Combretaceæ*. The fruits are ground in steel mills in Yorkshire, the powder being employed for tanning and dyeing. The unripe fruit is used as an aperient and also in diarrhœa by Mecca pilgrims.

W. W. H. (153/33).—Isle of Wight Bee Disease.—The Ministry of Agriculture and Fisheries (2 St. James's Square, London, S.W.) publish a leaflet (No. 253) on this subject, which you can obtain on request.

J. F. A. (19/7).—Non-deliquescent Table Salt.—The addition of 4 per cent. of calcium phosphate to pure table salt has the effect of preventing deliquescence. The quantity of magnesium chloride present should be eliminated as much as possible.

Mist (17/7).—Lin. Potass. Iod. c. Sapone.—A liquid form of this liniment is made as follows:

Soft soap	ʒij.
Potassium iodide	ʒiss.
Glycerin	ʒj.
Oil of lemon	5j.
Alcohol (60 per cent.) ...	ʒx.

Dissolve the soap, preferably by a gentle heat, in the mixture of alcohol, glycerin, and essential oil; add the iodide of potassium and shake until dissolved. Decant or filter, if necessary, after standing a few hours.

J. J. C. (16/7).—Preserving Rabbit-skins.—Stretch the fresh skins on a board, fur side downwards. Scrape off all superfluous fat, and for a week wet daily with a solution of 1 lb. each of alum and salt in 2 gals. of water. Then smooth the surface with pumice-stone and apply arsenical soap made from such a recipe as the following:

White arsenic	4 parts
Slaked lime	4 parts
Sodium carbonate	12 parts
Powdered camphor	3 parts
Soft soap	4 parts

Mix well together and add a little water to bring the mixture to the consistence of soft soap.

Retrospect of Fifty Years Ago.

Reprinted from "The Chemist and Druggist," July 15, 1870.

Pharmacy Student's Accident.

A terrible accident occurred the other day at the School of Pharmacy. A student named Tronçay was heating a solution of sodic hyposulphite with nitric acid in a test-tube. Applying his nose to it, in order to recognise the smell of the disengaged sulphurous acid gas, a sudden ebullition lanced the whole of the burning liquid in his eyes. Notwithstanding the praiseworthy promptitude with which water was applied, the cornea of both eyes was destroyed. Dr. Gosselin, who happened to be present, could do nothing to relieve this horrible misfortune, which has deprived of sight a promising young man aged twenty-four. When hurt, he shouted, "*Au robinet!*" which one man construed as a call for the eminent professor of materia medica, and ran off to fetch M. Robinet, instead of taking his comrade to the water-tap.

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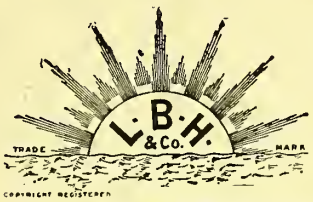
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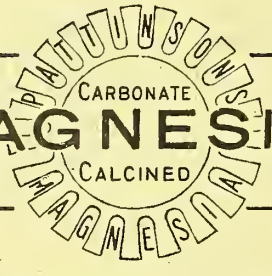
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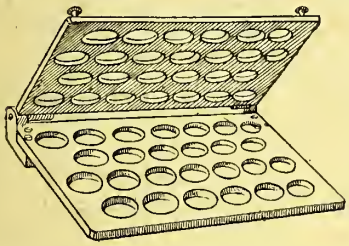
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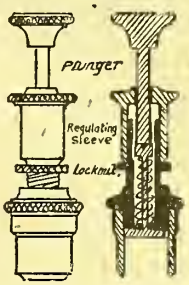
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The ANGLO-FRENCH DRUG Co., Ltd.,
238a Gray's Inn Road,
LONDON, W.C.1.

PHARMACEUTICAL PREPARATIONS.

Quinine Salts are now Restricted

KINECTINE.
A Quinine Salt of Hectine. Prophylactive and Curative for Hay Fever, Rhinitis, Influenza.
In Tablets

KRAMYZARINE.
Treatment of Varicose Veins, Phlebitis, Varicose Ulcers, &c.

LATAPIE.
Reaction.
Simplified Wassermann Test, from the Pasteur Institute.

MORUBILINE.
Extract of the fresh liver of the cod. Supersedes Cod Liver Oil.

NEOCAINE-SURRENINE.
A perfect Cocaine substitute of low toxicity.
Reliable and safe.
Spinal and Local Anæsthesia.
Ointments, Gargles, Snuffs, &c.

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Alkaline Solution of Glycerophosphates

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For Constipation. A combination of pancreatic, biliary, and intestinal secretions. A normal regulator of the intestinal functions.
Tablets.

QUINEINE.
A liquid extract from Cinchona Succirubra. Contains 5% of Quinine Alkaloid.

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(LUMIÉRE)
For the treatment of Gonorrhœa in its various stages by the internal administrations of specially prepared Gonococci. In Spherules. Rapid, effectual, harmless.

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For Staphylococcal affections.
In 2 c.c. ampoules for Intramuscular Injection.

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Oxide of Tin and Tin-metal free from lead. Treatment of Acne, Boils, etc.

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Solution of Saccharose.
Intramuscular Injection for Tuberculosis.

SUPSALVS.
Stable Suppositories of "606."
(French Manufacture).
Simple, effective, harmless.
Give excellent clinical results.

TRICALCINE.
Contains the pure phosphates of lime and magnesia.

URASEPTINE.
Composed of Urotropine and Helmitol.
A powerful Urinary Antiseptic, dissolves and eliminates Uric Acid

Clarke's Blood Mixture.

WHOLESALE PRICES.

3/- size Clarke's Blood Mixture £1-7-0 per doz. £16-4-0 per gross net.
12/- „ „ „ „ £5-8-0 „ £64-16-0 „ net.

Orders : Minimum Quantity £16-4-0 Value
Carriage paid upon orders of £100.

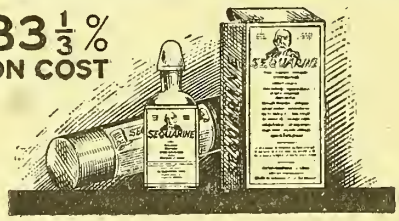
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Above prices will give a Profit of 33⅓% on cost to the Distributors.

Sole Proprietors :

THE LINCOLN & MIDLAND COUNTIES' DRUG CO. LTD.,
PARK STREET, LINCOLN.

33⅓% ON COST



SEQUARINE

Because Sequarine is the embodiment of a great scientist's discoveries.
Because anxious sufferers in thousands are seeking real relief from the dangers of Neurasthenia and nervous disorders generally.
Because Sequarine is given consistent and effective publicity.
For these reasons the supply of Sequarine has for some time been behind the great demand. But full supplies are now assured, and all should make sure ample stocks are on hand. A new publicity campaign is about to be launched.

P.A.T.A. Prices: Retail Wholesale
Sequarine (Liquid)... 5/- ... 45/- doz.
„ Tablets ... 3/- ... 27/- „
„ „ ... 1/3 ... 12/- „

Special terms to retailers: 5% discount on 3 doz lots.
SEQUARINE, LTD., Albion House, 59-61 New Oxford St., London, W.C.1

NEW PRICES
OF
NEW-SKIN

Increased cost of manufacture compels a rise in the prices of "New-Skin" as follows :

		Retail Prices		Trade Prices
Pocket	Size	10½d.	Corresponding Increase in Trade Prices	8/5
Medium	„	2/-		19/2
Physician's	„	3/-		28/9½

£3 and upwards Carriage Paid.

MODERATE STOCKS ARE NOW IN HAND.

Order through your Wholesaler, or direct—

J. E. GARRATT,
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ÉTABLISSEMENTS CHATELAIN,

2 & 2 bis RUE DE VALENCIENNES, PARIS.

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RE-EDUCATION OF THE INTESTINE.

Constipation, Enteritis, Hæmorrhoids, Indigestion, Skin Blemishes, &c.

Price 5/- per box.

GLOBÉOL

POWERFUL BLOOD TONIC.

Anæmia, Nervous Exhaustion, General Debility, Tuberculosis Convalescence, etc.

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POWERFUL URINARY ANTISEPTIC.

Cystitis, Prostatitis, Catarrh of the Bladder, Renal Tuberculosis, etc. etc.

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SCIENTIFIC SUPPOSITORIES

For Hæmorrhoids, Rectitis. Anal Fistula, etc. Anti-hæmorrhagic, Sedative, De-congesting.

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POWERFUL URIC ACID SOLVENT.

Rheumatism, Gout, Arterio-sclerosis, Stones, Gravel, Sciatica, Neuralgia and all Uric Acid disorders.

Price 12/- per bottle.

VAMIANINE

New Scientific Preparation for Chronic Skin Affections, Psoriasis, Eczema, Acne, etc.

Price 11/- per bottle.

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SCIENTIFIC PREPARATION OF LACTIC FERMENTS.

Indicated in Intestinal Disorders, Dysentery, Diarrhœa, Dyspepsia, Enteritis, Typhoid, Skin Eruptions, etc., etc.

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Antiseptic for local Gynæcological use.

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SPECIFIC FOR THE LIVER.

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Stocked by all Wholesalers. *Now being largely advertised.*

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N.379.

NASAL SPECIFIC
Look to your Stock!
BUY DIRECT
on best terms.

Protected at face value, 1/3
Price: 1 doz. 11/9, 3 doz. 33/9, 1 gross 135/-

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"NOSTROLINE"
Prevents and Cures
COLD IN THE HEAD,
NASAL CATARRH,
HAY FEVER ETC.
Protects against Infection.

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CLIFTON, BRISTOL.

Cephos
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For NEURALGIA, HEADACHE, RHEUMATISM and INFLUENZA.

Write for wholesale terms to
CEPHOS LTD., Blackburn, Lancs.

"SEPTAX" SPONGE CLEANSER
Sponges cleaned while you wait.
Absolutely reliable.

In Boxes - - 9/- per dozen
Retail - - - - 1/- each

Sufficient in each box for 3 ordinary sponges.

British Depot:
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Keep Nujol on the eye-line



What sells the Second Bottle?

It's not the first sale of an article that piles up the big profit, but the second, third, fourth and future sales.

Nujol is a profit-builder because it is a repeater by nature. It is not a one-time seller for emergency use. It's a treatment—not a dose. Your customers can use Nujol indefinitely because it forms no habits.

Nujol is the product of a world-wide organisation, prepared and purified from the choice of the world's raw material.

Persistently Advertised, too!

Take advantage of the window display and get your full share of Nujol profits.

If your Wholesale house cannot supply you, write to the sole Distributors for the United Kingdom—The Anglo-American Oil Co. Ltd., 36 Queen Anne's Gate, London, S.W.1. For India: Muller & Phipps (India), Ltd., Bombay, Calcutta, Madras.

Send us your name and address for Window Display material, sent carriage paid on request—Anglo-American Oil Co. Ltd., 36 Queen Anne's Gate, S.W.1.

A. ROWLAND & SONS

Proprietors of

ROWLAND'S MACASSAR OIL
KALYDOR *and* **ODONTO**

beg to give notice that their offices and warehouse are now at

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Rowland's Macassar Oil, being now on the P.A.T.A. list, is well worth the attention of the Wholesale and Retail Trade, as it shows a fair margin of profit to all alike.

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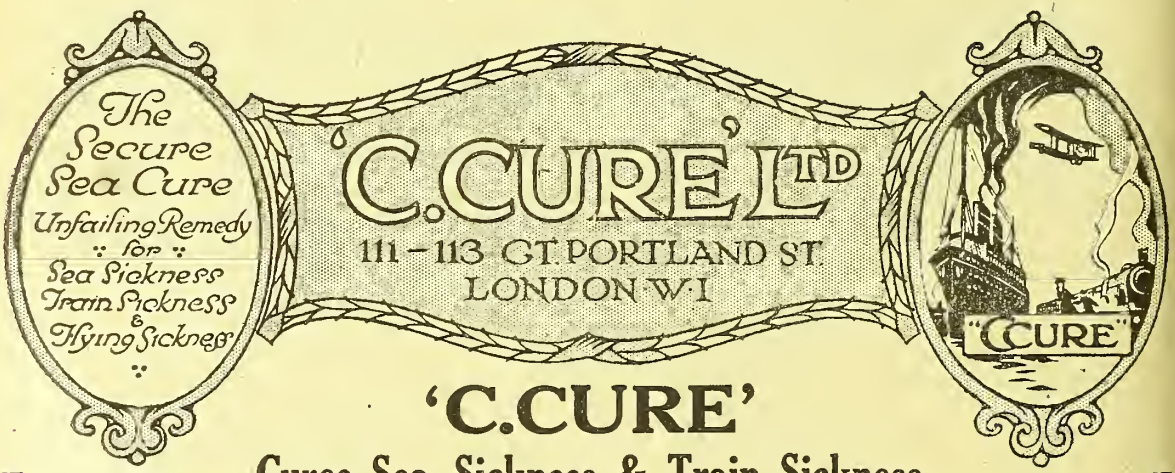
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RADIUM COMPOUND.
SELF-LUMINOUS.
Highest Possible Efficiency, Durability & Value.

As supplied to H.M. Government, &c.
Guaranteed to pass N.P.L. requirements.
All Grades in stock, from 15/- per gram.
RADIUM SALTS TESTED AND CERTIFIED.

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'C.CURE'

Cures Sea Sickness & Train Sickness

MANUFACTURED WHOLLY IN GREAT BRITAIN OF BRITISH INGREDIENTS.

PROTECTED PRICES OF 'C.CURE' packed in aluminium boxes enclosed in decorated cartons.

LARGE SIZE, **8/-** per box. Contains capsules for Four Journeys.
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Each box contains twice the value of any other sea-sickness remedy.

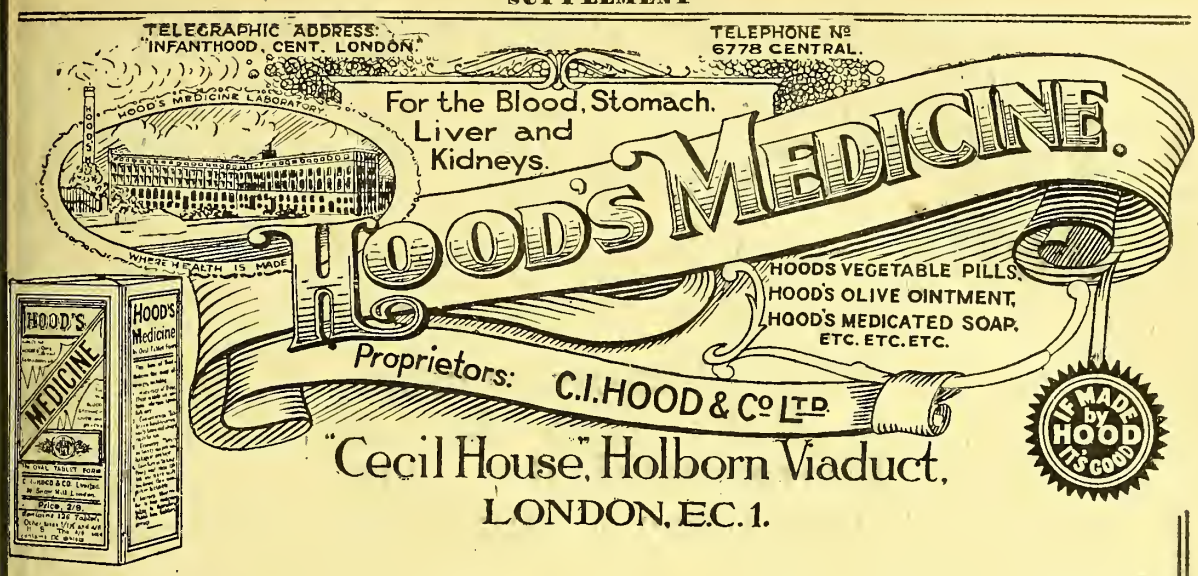
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Special Extra Cash Discount 2½ %.

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can now be obtained from your Wholesale House at the following prices :

Retail & Face Price	*2/6*	*5/-*	*8/6*
Wholesale Price	*24/-*	*48/-*	*82/-*

Old Profit		New Profit
2¼d.	Small Size	6d.
5½d.	Medium Size	1/-
9d.	Large Size	1/8

Frequent complaints from people who have had samples not being able to obtain regular supplies from their Chemist leads us to hope that this announcement will aid the friendly co-operation hitherto enjoyed.

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,, ,, ...	3s. 0d.	Tus Sano (for Coughs)	3s. 0d.	,, ,, ...	5s. 0d.
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,, ,, ...	1s. 0d.	,, ...	5s. 0d.	,, ,, ...	3s. 0d.

Antiseptets ... 1s. 3d. 3s. 0d., and 5s. 0d. Anisen ... 2s. 6d.

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White, Yellow, Amber, & Ruby Red, for all Pharmaceutical and Veterinary purposes

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in qualities, white, lemon, yellow and golden, for pharmaceutical purposes.

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Inquiries are solicited for this article of **British Manufacture**, and buyers may rely that for quality and price, it will meet any competition.

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"OLEUM DEELINÆ," a certain cure for Eczema.

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PETROLEUM JELLIES.
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PALE & RED LUBRICATING OILS
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Petroleum Jelly

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AND AT NEW YORK.

Telegrams: "Obtempero, Cannon, London." Telephone: City 6321.

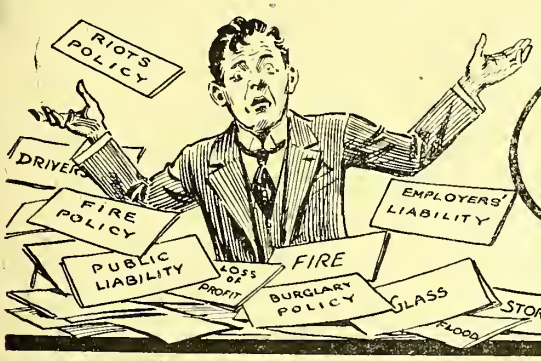
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B.P. 1914

"STERNS" B.P. Grade is guaranteed to be the finest quality of Liquid Paraffin produced. It has the patronage of the largest wholesalers, the recommendation of the medical profession, and is used in the principal hospitals in preference to all other kinds.

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Merge all your insurances into one—

THE POOL

COMPREHENSIVE SHOPKEEPERS POLICY

THE MOST COMPLETE AND ALL EMBRACING AND AT THE SAME TIME THE MOST ECONOMICAL SCHEME OF INSURANCE EVER YET DEVISED

POOLING PROFITS REDUCE THE PREMIUM ON RENEWAL.

ANNUAL BONUSES.

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FINEST **BLACKS** AND

COLOURS

(ALL SHADES)

CARAMEL COLOUR

IN POWDER.

Guaranteed Harmless.

50

times the concentration of Liquid Caramel.

Sample on application.

Soluble in

WATER SPIRIT
OIL TURPS
WAX BENZOLINE
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PETROLEUM CREOSOTE
and
IN FACT—ANYTHING.

BLACK FOR INK.

MARKING INK.

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A combined Stain and Preservative for Wood

HOUSEHOLD DYES.

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In 1/- Tins.

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Hounslow, Middlesex.

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BRITISH WAX REFINING
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WHITE BEESWAX
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Slabs, Bars, Tablets or Discs

CERESINE WAX
Bleached Carnauba Wax
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All Waxes Refined, Bleached and Manufactured at our Works, REDHILL, SURREY

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CHEMISTS'

LABELS and CARTONS.
Our Prices bear comparison with any competitive house.

Thomas Waide & Sons
Chemists' Printers
Leeds

We send full set of Samples for 10/6, and credit if orders are given for £10 and upwards.

Important Announcement to the Trade

ADULTERATION OF OLIVE OIL.

As the adulteration of OLIVE OIL with TEA-SEED OIL is very much on the increase, I beg to draw the attention of the Trade to the following test which, it is to be hoped, may put an end to this fraud—

Prepare a mixture of concentrated nitric acid, concentrated sulphuric acid and water, equal parts by weight. Of this mixture 10 c.c. is well shaken in a test-tube with 10 c.c. of the oil to be analysed, and placed in boiling water for twenty minutes. Should any tea-seed oil be present the oil layer changes to a cherry-red colour. The colour varies with the amount and quality of tea-seed oil present, the crude oil gives a deeper colour. When cool, samples of pure olive oil solidify to a yellow, nearly white, mass, while the adulterated oil remains liquid or semi-solid, according to the amount of tea-seed oil present, having the characteristic colour.

When the tea-seed oil is less than 20 per cent. it is better to work on 50 c.c. of oil and 30 c.c. of the acid mixture. I have tried this test on samples of pure olive oil from different sources, and in no case have I obtained a positive reaction, but other vegetable oils, such as cotton-seed, sesame, etc., give the same reaction as tea-seed oil, and should be looked for. As the majority of olive oils at present on the market are grossly adulterated with tea-seed oil, especially the French and Italian, I hope that public analysts will take the matter in hand and put a stop to this fraudulent practice.

(Signed) JULES COFMAN-NICORESTI

The Analytical Laboratories,
Apothecaries' Hall,
Blackfriars, London, E.C.4.

Reprint from "The Chemist and Druggist," March 20th, 1920, p. 75.

Leon Frenkel
Olive Oil Importer,
10 Lime Street,
LONDON, E.C.3

L. F.

ADEPS LANÆ, P.B.

THE FINEST BRITISH LANOLINE PRODUCED
IS MANUFACTURED BY

THE PHARMACEUTICAL LANOLINE CO.

Carnwath Road, Fulham, London, S.W.
WHO INVITE INQUIRIES.

METHYLATED SPIRIT

OILS AND CHEMICALS

Buy from one of the oldest houses in the trade.
Write for Prices. *Established 1794.*

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"ULTRAVI" Brand.
The Latest & Best.

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C.V.O. Chemical Works,
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WOOL GREASE
ALL GRADES.

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Block and 2-oz. Sticks. *Write for Samples and Prices.*

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PURE
NORWEGIAN

COD LIVER OIL

from the original factory at
LOFODEN, NORWAY.

In Original Tin-Lined Barrels, Gallon Tins, Winchesters and Bottles,

Samples and Prices on application to the Sole Proprietors :

HERTZ & CO.,
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Established 1878
Warehouses, Factory & Laboratory, 20 Bevis Marks.
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IN BULK, JARS OR TINS.

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BEEF, MUTTON and CHICKEN

possess great nutritive and restorative powers, being immediately digested and absorbed by the stomach Although effective stimulants in physical and mental exhaustion, they contain no wine or other deleterious admixture.

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MALT EXTRACT AND



MALT & COD LIVER OIL

Prepared only from the Finest East-Coast Barley, combined with the best Norwegian Non-Freezing Cod Liver Oil.

Packed in Screw-Capped Jars, Bottles and Tins, holding 1 lb. and 2 lb. Neatly Labelled and Wrapped. Customer's Name printed on Labels for Orders of 1 Gross and upwards.

Telephones: Nitshill—Pollokshaws 14 London—Avenue 5661 (3 lines).

PERRY & HOPE, Ltd.

Telegrams: "Perryope, Nitshill," "Perryope, Led, London."

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A COMBINED NERVE TONIC AND BLOOD PURIFIER.

Invaluable for Keeping the Liver and Kidneys Active.

Attractively packed.

Shows 50% Profit to you.

Price in gross lots, per **100/-** gross.
Carriage Paid.
Less Special Stocking Bonus of 5%



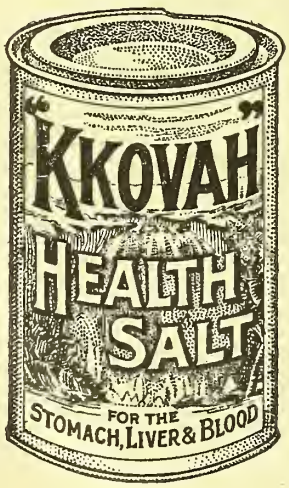
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Sole Proprietors—
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Makes you fit—keeps you fit

We create the demand —you supply the goods and take the profit!

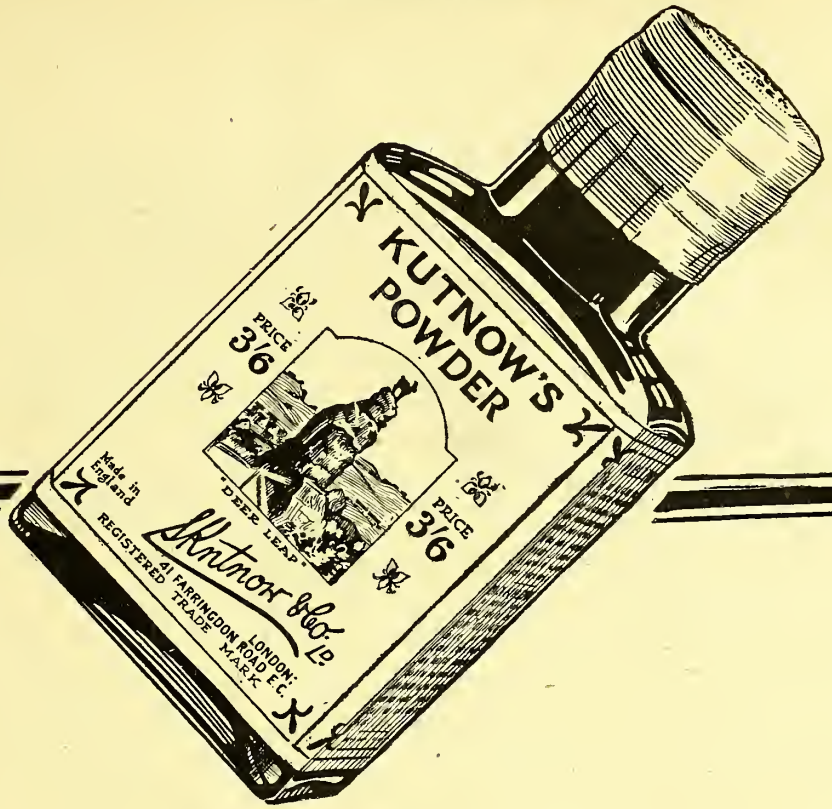
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Prices and Terms on request.

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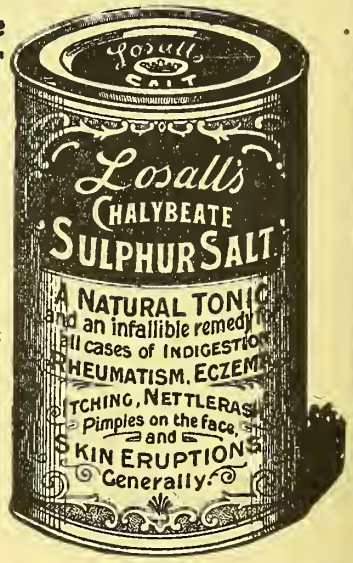
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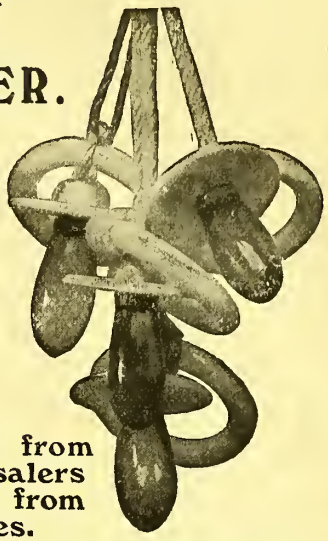
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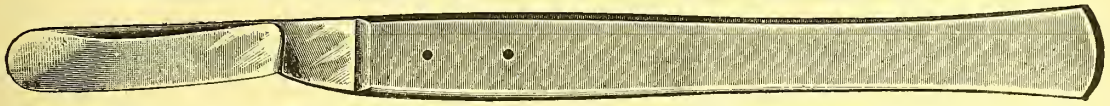
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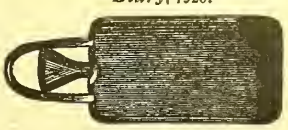
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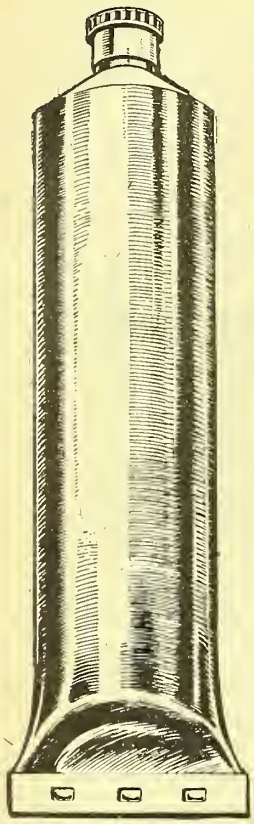
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[See pp. 440-1, "C. & D." Diary, 1920.



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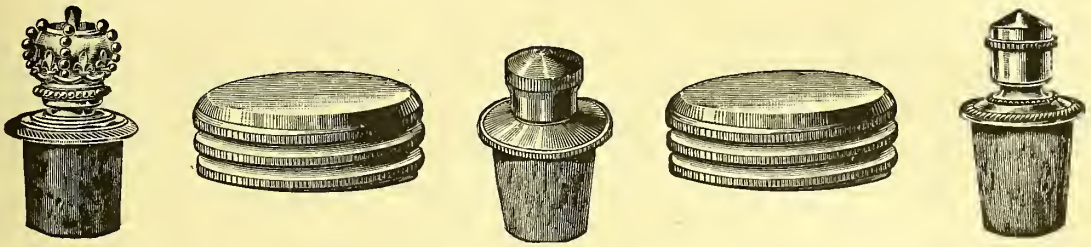
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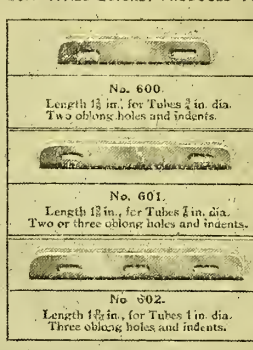
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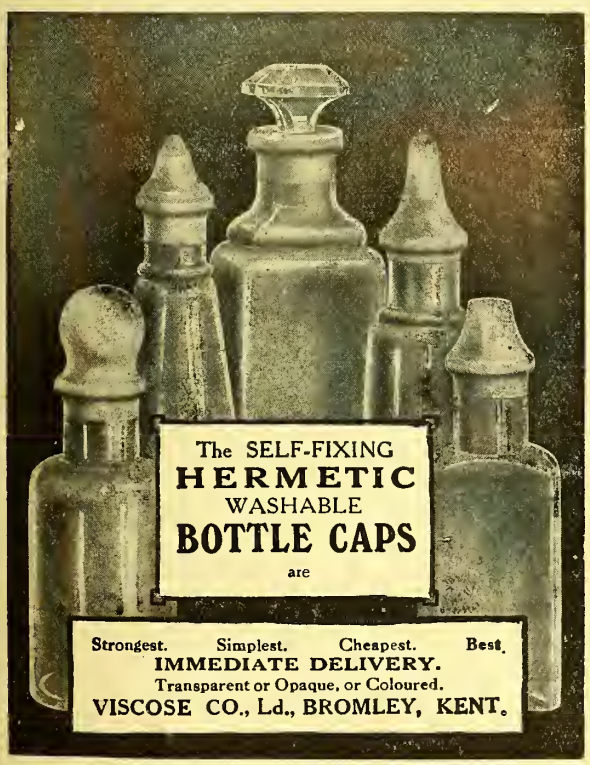
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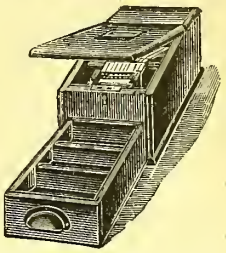


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The REPELLO *requires no shaking down*

A 30-second pushed back in an instant.



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NEW IMPROVED LENS FINDER

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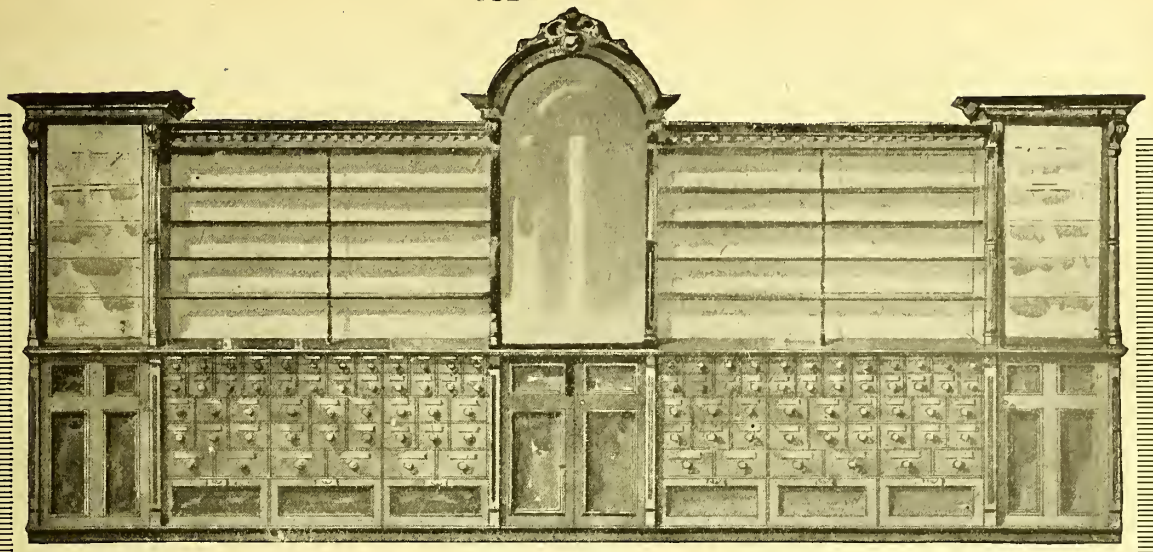
SPECIAL AWARD AND GOLD MEDAL, NEW ZEALAND, 1907.
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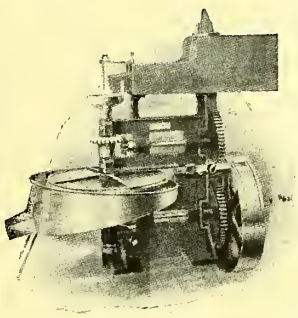
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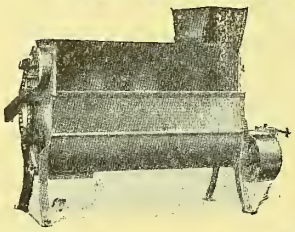
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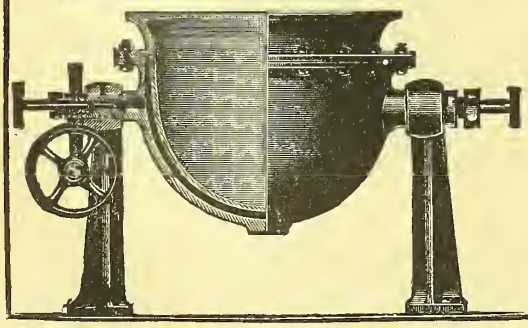
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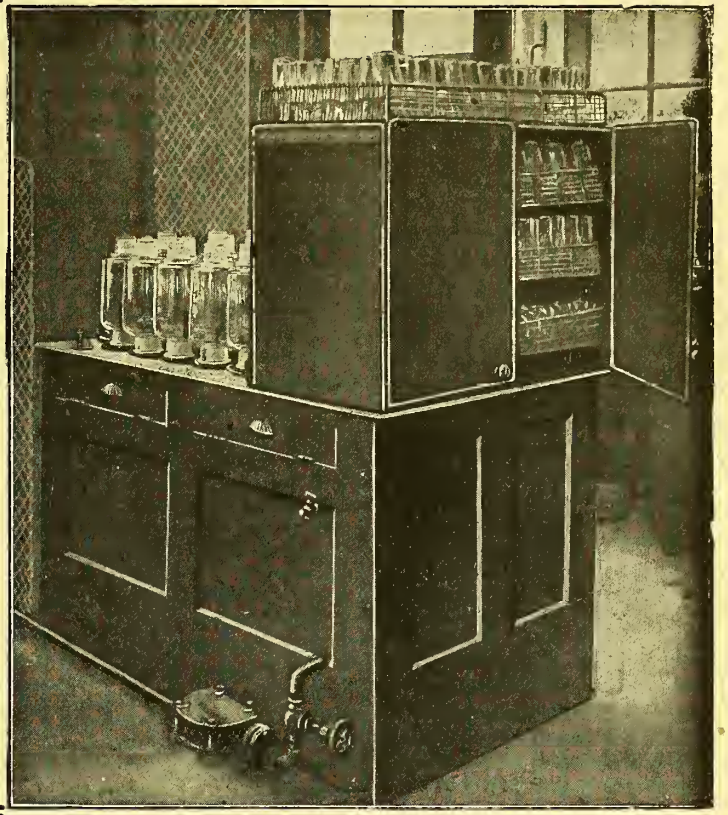
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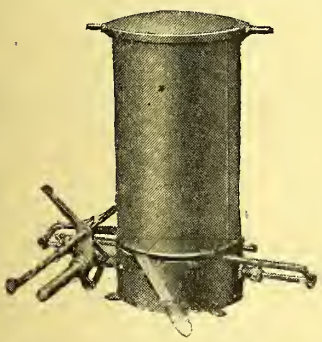
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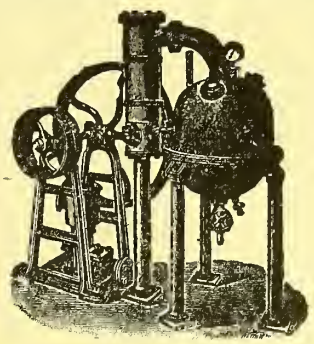
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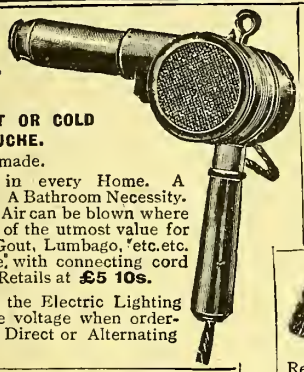
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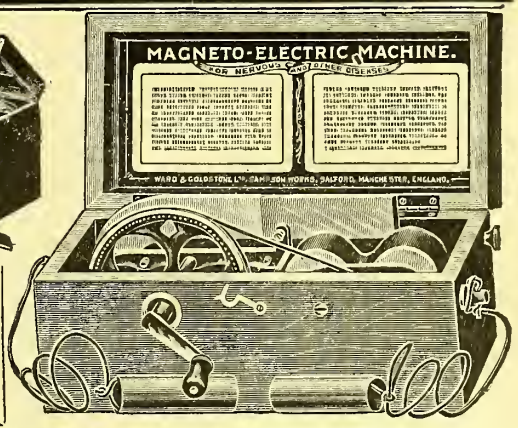
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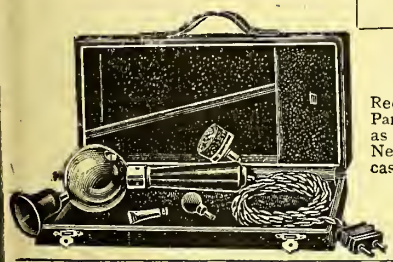
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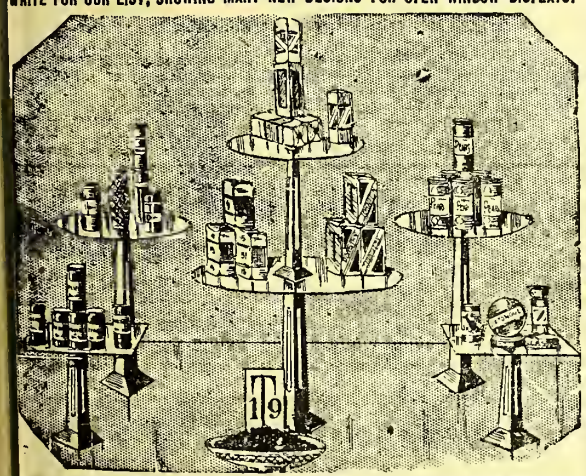
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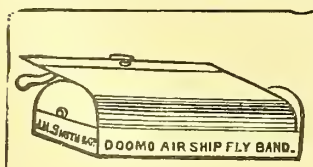
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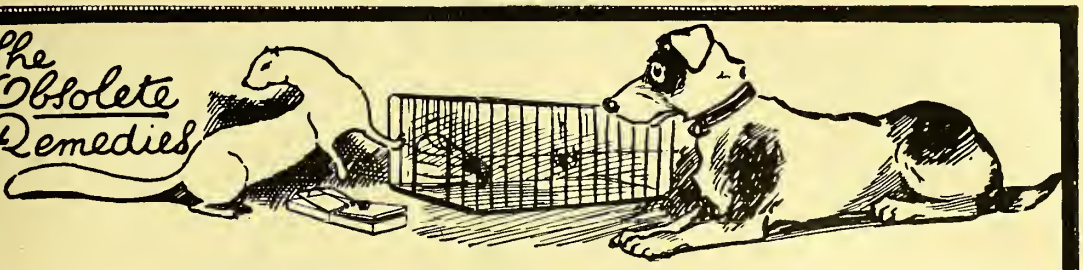
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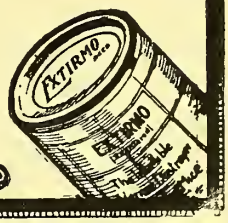
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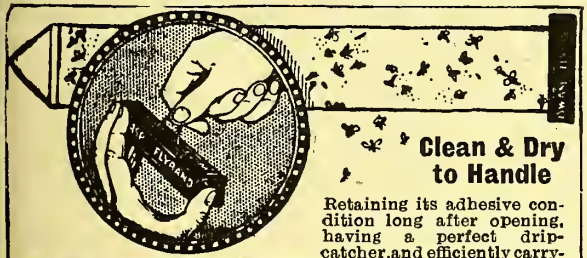
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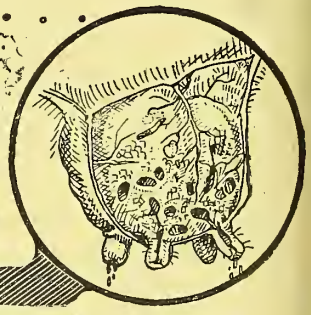
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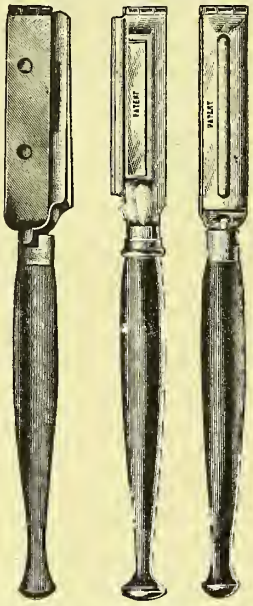
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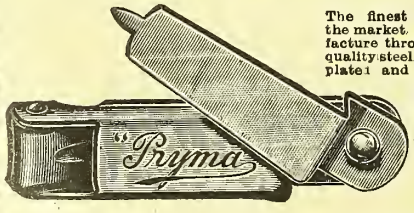
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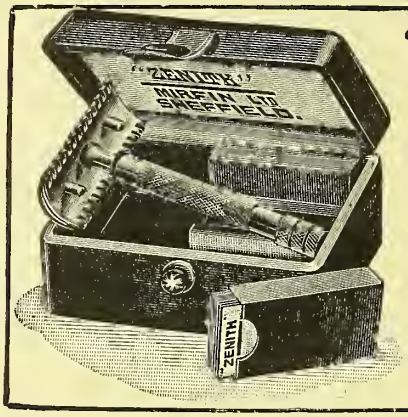
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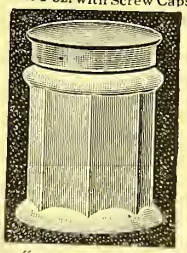
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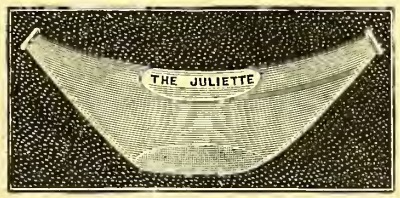
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42 CANNON ST. LONDON, E.C.4.

JULY 24, 1920

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The Advertiser may, if preferred, have replies addressed to th Office, and forwarded on payment of an additional charge of 1/-.

MANCHESTER OR NEAR.—Good Retail Business require turnover £1,000 to £3,000; state full particulars, whi shall be regarded in strict confidence. Apply 158/33, Office of th Paper.

A GOOD Retail Chemist and Druggist Business wanted at on within London or ten-mile radius; must show a good livin Please send full particulars as to price, turnover, and rent, whi will be treated in strict confidence, to C. Millar, 43 Northumbe land Place, Bayswater, London, W. 2.

WANTED to purchase, small Chemist's Business, Light Retai country or seaside preferred; one which had been neglect or under unqualified management not objected to. Apply 154/3 Office of this Paper.

WANTED, Business in village or small town, Midlands, Sout or South-Western County; cash immediately available; Managership, with view to succession. Reply, in confidence, 147/3 Office of this Paper.

WANTED, Business in industrial area; turnover about £3,50 Full particulars to 157/19, Office of this Paper.

PARTNERSHIPS.

TECHNICAL Chemist and Pharmacist, willing to invest £1,00 good works experience and Chemical qualifications, wish to join a manufacturing firm and take an active part in wor where Chemical knowledge and ability would be an asset; ho or abroad. Apply 158/7, Office of this Paper.

WANTED, lady to join another in purchase of an old-establish Chemist's Business in North of England; qualified; cash a good-class experience. Apply 156/10, Office of this Paper.

BUSINESSES FOR DISPOSAL.

6s. for 50 words or less; 6d. for every additional 10 words or less, prepaid.

BIRMINGHAM.—Druggist's Business for immediate disposal; death cause of selling; being run by a Junior; takings £14 ekly only, a decrease of 50 per cent.; situate in a working-class strict, there is a splendid opportunity for development; no spensing of any kind done; stock and fixtures worth £250; west price £300. Apply 158/6, Office of this Paper.

MIDLANDS.—Smart, compact Pharmacy, well stocked; net profit £450 (increasing); N.H.I., average 200 per month; od opening for Dentistry, Optics, and Photography; rent, rates, ., £27 per annum; vacant living accommodation over the pre-ses; good reason for disposal; price for quick sale £550 net. Bargain" (159/1), Office of this Paper.

LYMOUTH.—For Sale, an old-established Herbal Business and Drug Store; same hands 38 years; main thoroughfare; good ing accommodation; early possession can be arranged. Apply, first instance, to "R.," 56 Great Dover Street, Borough, Lon-t, S.E. 1.

HROPSHIRE.—Country town, beautifully situated; well stocked, sound, Light Retail Business for early disposal; urning £1,700, mostly cash; very little N.H.I.; good Photo-phic connection; double-fronted shop, electric light, excellent se and convenient warehouse close to; every investigation given bona-fide inquirers; price, value of stock and fixtures £1,000. ply "Statim" (156/35), Office of this Paper.

HEMIST-DRUGGIST; unopposed; populous S.W. suburb; well-fitted shop; good trade and living accommodation; nice den; returns £3,000 per annum; owner 10 years; bargain, ,000, includes large valuable stock, etc. Write Durham, 177 rbury Crescent, S.W. 16.

XCEPTIONAL opportunity for a practical man; an old-established Chemist's Business, in favourite South Coast n, occupying excellent position in a busy main road; plenty scope; selling through age; double-fronted shop, 10 rooms; se, including stock and fixtures, £1,500. Bertram Howell, 114 en's Road, Brighton.

IMPORTANT NOTICE.—For disposal as a going concern that far-famed proprietary household medicine and its com-nds, knowns as "Barrett's Mandrake Specialities," established 40 years; 30 gold and other medals, etc.; proprietor retiring autumn; exceptional offer, chance seldom met with; stock, cesses, registered trade-mark, goodwill, and thousands of olicfted testimonials, to be sold outright, either by privat-ity now or by tender later; every facility offered for full estigation to bona-fide purchasers. Apply, with bankers rences, to Professor Joshua Barrett, F.E.S.S., Mandrake use, 26 Beechfield Avenue, Blackpool.

ROPRIETOR having acquired larger business is anxious to sell quickly; returns average £85 per month, and rapidly in-sing; N.H.I.; corner shop; working-class district in Birming-; accept reasonable offer for cash. Apply Wood, 351 High et, West Bromwich.

MARTLY fitted lock-up Shop, on main road; densely populated London working-class district; now taking over £1,500 from paratively few personal customers; unique chance for expan-on store lines; profits high; expenses exceedingly low; price ut £950. Apply 159/11, Office of this Paper

AGENCIES.

6s. for 50 words or less; 6d. for every additional 10 words or less, prepaid.

ELAND AND SCOTLAND.—Commercial gentleman, with over 20 years' valuable connection calling on Wholesale and Retail nists, Stores, high-class Hairdressers, etc., will be open from ust 1st for additional Agency; Perfumes. Brushes, or good rietary that requires pushing with window shows; firms of repute only need reply. "Facit," 5 Eustace Street, Dublin.

IRM having offices in London, Amsterdam, and Paris requires Sole Agencies for English manufacturers of finished and ufactured goods. Write "T. O. C.," c/o Streets, 30 Corn-E.C. 3.

ERFUMERY.—Gentleman, experienced London and provinces, formerly representing well-known Manufacturing Chemists, ires Sole Agency in Great Britain for high-class British or ign Perfumes and Allied lines; advertiser is an ex-Service , and is keen, energetic, pushing; business and personal rences if required. Apply P.C.B. 1/8, Office of this Paper.

TO LET.

6s. for 50 words or less; 6d. for every additional 10 words or less, prepaid.

CHEMIST'S Shop, 180 Wandsworth Road, to Let; lease; immediate possession; good living rooms, back entrance, good repair; Counters, Fittings, Carboys, Bottles, etc.; by valuation; ready for immediate business. Collins, 7 Clifton Street, Wandsworth Road.

DENTAL.—Chemist invites applications for use of room (instruments and fittings provided) two or three days a week in Thames Valley, 16 miles from Waterloo; good train service; established Dental connection; please state terms. F. H. B., 19 Bisham Gardens, Highgate, N. 6.

SHOPS to Let, on favourable leases; premier positions; best shopping centres in Croydon, Woolwich, Portsmouth, Chatham, Edgware Road, London, and Peckham, London. For full particulars write Advertiser, "Friars," Chepstow Road, East Croydon.

TO Let, with immediate vacant possession, House and Shop adjoining; A1 position in main street; small seaside town; very low rent to suitable man. Apply, first instance, to 21/7L, Office of this Paper.

SITUATIONS OPEN.

RETAIL.

6s. for 40 words or less; 6d. for every additional 10 words or less, prepaid.

The Advertiser may, if preferred, have replies addressed to this Office, and forwarded on payment of an additional charge of 1/-.

ASSISTANT PHARMACISTS IN NAVAL HOSPITALS.

An Examination for candidates for appointment as ASSISTANT PHARMACISTS in Naval Hospitals will be held in London on 28th October, 1920.

The number of appointments offered for competition is three.

The age of candidates on entry must be not less than 21, nor more than 28 years.

Candidates must possess either the Major or Minor qualifications of the Pharmaceutical Society of Great Britain or the certificate of competency granted by the Pharmaceutical Society of Ireland.

The regulations for entry and subjects of examination will be supplied on application to the Secretary of the Admiralty (C.E.). Application for admission to the examination should be made to the Secretary of the Admiralty (C.E.) not later than 1st September.

BARRY DOCKS (GLAM.).—Unqualified Assistant required at once. Apply, stating full particulars of experience, if or when disengaged, salary required, and enclose photo if possible, W. T. Hicks & Co., 28 Duke Street, Cardiff.

BIRMINGHAM.—Qualified, competent Manager required. Apply, stating age, experience, and salary, to 158/31, Office of this Paper.

EASTBOURNE.—Qualified holiday Assistant, for a month from August 16th. References, photo, and salary required, to Geo. A. Harmer & Son, Eastbourne. Good Dispensing and Photo experience required.

HUYTON, near Liverpool.—Capable Junior required for Dispensing and Photographic business (outdoors). State salary, etc., F. J. Parker.

LONDON, S.W.—Junior Assistant or Improver; used to quick Cash trade; good references essential; state age, height, salary, when at liberty, with full particulars of experience, etc., to 158/19. Office of this Paper.

MANCHESTER.—Unqualified Assistant required immediately, with Counter and Dispensing experience. State salary required and particulars to 158/29, Office of this Paper.

SOUTH COAST.—Qualified Assistant, young. State age, height, experience, salary required, and enclosing photo (returnable), to 154/33, Office of this Paper.

ASSISTANT for Photography; easy hours; either half-day or whole day's work; at East Coast seaside for abont six weeks. Apply 156/23, Office of this Paper.

BALKWILL & CO., Plymouth, require an Assistant, accustomed to good-class Retail trade. Please give full particulars as to salary required and references, and (if possible) enclose photograph.

BATTERSEA POLYTECHNIC, London, S.W. 11.—The Governing Body require the services, during the Session 1920-21, of part-time Day Lecturers in Pharmacy, Dispensing, Materia Medica, and Pharmaceutical Botany. Full particulars and stamped addressed envelope to the Secretary.

ASSISTANT wanted, chiefly for Dispensing, for good-class business. Apply, with salary required, etc, to Hill & Wilson, 357 High Street, Cheltenham.

JUNIOR Assistant wanted about end of August. Bates, Chemist, Brooks's Bar, Manchester.

JUNIOR Assistant (outdoors); energetic and trustworthy; permanency; good prospects for suitable applicant; hours 9 to 7.30, Thursday 1, Friday 8, Saturday 8.30; no Sunday duty. State age, height, experience, references, salary required, and when disengaged; enclose photo, to be returned. L. J. Reade, Pharmaceutical Chemist, 17 Lichfield Street, Wolverhampton.

LADY Assistant required for Light Retail and Dispensing business. Particulars and salary to J. E. French, 128 High Street, Sittingbourne.

LADY Dispenser and Bookkeeper required by firm of Doctors for three weeks from September 1st; previous experience essential; country town in Herts; one hour from Euston. Apply 156/33, Office of this Paper.

LADY Dispenser (Locum) wanted for month of August; Panel and Cash practice. Apply personally to Dr. Hanbury, 157 Roman Road, Bow, E. 3.

LOCUM Wanted, reliable and experienced, for a week or fortnight in August next. Apply to L. Tucker Cooke, 35 Northgate Street, Gloucester, giving references and terms.

PART-TIME Assistant (male) wanted for two or three evenings a week, Saturdays if possible, and occasional Sunday duty; two other Assistants kept. Reply, stating age, experience, salary required per hour, and time available, C. B., 20 New Street, Dorset Square, N.W. 1.

PHOTOGRAPHIC.—Wanted, young lady, accustomed to Velox Printing. Apply, with particulars of experience and salary (outdoors), 158/3, Office of this Paper.

QUALIFIED Manager for branch shop in Southsea; state age and salary required. Apply "W. B." (153/17), Office of this Paper.

QUALIFIED Male Pharmacist required (at once) for temporary service; salary £261 2s. per annum, inclusive of bonus; residence, or £35 per annum in lieu. Apply Superintending Pharmacist, R.N. Hospital, Chatham.

QUALIFIED Junior, with good experience. Apply W. Shadforth, Ph.C., 63 Grove Road, Bow, E. 3.

SHORTLY.—An Assistant of good address for the Counter and occasional Dispensing, must be energetic and experienced, for quick Cash trade; lady not objected to. Send full particulars, to save time, stating salary required, T. C. Cornwell, Rexall Pharmacy, Hanley.

UNQUALIFIED Assistant required (outdoors) for good-class country business; kindly state full particulars as to experience, references, salary, etc., H. Shackleton, Pharmacist, Abergavenny.

UNQUALIFIED Assistant; age about 24; smart, and with good experience; outdoors; permanency; easy hours and no Sunday duty; state salary. J. Jones, Pharmaceutical Chemist, Bridgend, Glam.

WANTED, Junior Assistant or Turnover Apprentice; 48 hours per week. Apply, stating age, experience, and wage required, with copies of references, to Manager, Drug and Dispensing Dept., Co-operative Society, Wellington Street, Stockton.

WANTED, capable Assistant for good-class Dispensing and Retail; qualified or unqualified; a good man desiring a permanency will receive every consideration. Apply J. Noble, 20 Woodcote Road, Wallington, Surrey (12 miles from Victoria or London Bridge).

WHOLESALE.

The **Advertiser** may, if preferred, have replies addressed to **Office, and forwarded on payment of an additional charge of 1**

ASSISTANT Warehouse Manager, also to act as Stockkee required; experience in working stock control systems advantage; best references indispensable. Address "Warehou c/o Mitchell's Advertising Agency, 1 Snow Hill, E.C. 1.

DRUGGISTS' Sundries Trade, South Coast.—Experienced C required; please state age, experience, wages desired, usual information. Apply 158/90, Office of this Paper.

DRUGGISTS' SUNDRIES.—Young woman, with good kn ledge of Sundries and Surgical Sundries, required by goyne, Burbidges & Co., Ltd., East Ham. Apply first by lett

LIVE Travellers wanted, with sound connections, to sell known Flybands and Papers, etc.; good commission te Apply London Chemical Co., 75 Grant Road, Addiscombe, Sur

LONDON Representative, with sound connection (essent wanted, to commence September 1st; salary, commission, expenses; a real opportunity for a worker capable of building and maintaining a steady business for essential every-day that have new exclusive features. P.C.B. 2/8, Office of Paper.

MAJOR man required by Wholesale Drug house, South C for ordinary Pharmaceutical Analyses and the productio high-class Toilet Preparations; well-fitted laboratory. Apply confidence, stating salary desired, experience, age, etc., 15 Office of this Paper.

PACKERS for export; men used to packing Drugs and Sund for shipment required by Burgoyne, Burbidges & Co., East Ham. Apply first by letter.

QUALIFIED Chemist for costing and quotation departmen Toilet, Pill, Tablet and Capsule Sections Wholesale D gist business. Apply, stating age, experience, whether marrie single, and salary asked, to "Hexamine" (35/258), Offic this Paper.

REQUIRED, by a large City Chemical house for their Ex Department, an Assistant Counterman for checking despatching goods; must be active and intelligent; age 3 Apply 15/12J., Office of this Paper.

THE services of a young man (25-30) are required by a manufacturing firm of Chemicals and Pharmaceutical ducts to represent them in the provinces to interview Doc Pharmaceutical knowledge desirable, but not altogether esse good address and education important; state salary req Apply 5/20C, Office of this Paper.

TOILET GOODS.—Forewoman required by manufacture Toilet preparations in Highgate; must be accustom take charge of girls, keep work records, etc. Apply, statin experience, references, wages required, etc., to P.C.B. 87/29, of this Paper.

TRAVELLERS with good connection wanted for North of land and Midlands by old-established firm specialisi Medicinal Capsules; liberal commission. Full particulars Office of this Paper.

TRAVELLERS wanted, calling on Retail Chemists, Hos etc., to carry side-lines against liberal commission; and country; state district. Apply 157/6, Office of this P

SITUATIONS OPEN.

(Colonial, Indian and Foreign.)

The **Advertiser** may, if preferred, have replies addressed **Office, and forwarded on payment of an additional charge**

BENGAL.—Wanted, alert, reliable Assistant (qualified pre with good Dispensing, Photographic, and Prescribi perience, as Manager for Hill Station Branch near Calcut not to exceed 26; must be abstainer (married or single); engagement, passage out and home; starting salary Rs. mensem and commission, with free furnished house. Appl cutta" (P.C.B. 1/39), Office of this Paper.

MESOPOTAMIA.—Qualified Pharmacist wanted (imme for civil administration Mesopotamia; salary, hou prospects excellent; Wholesale experience preferred. letter, Hockin, National Hotel, Upper Bedford Place, Square, London.

BOLIVIA, SOUTH AMERICA.—Qualified Assistant, about 25 years of age; accustomed to good-class Dispensing and neral business; Photographic experience essential; three years' gagement; first year £350, second year £400, third year £450; cond-class passage out and home; abstainer preferred; active, liging, good worker; room provided. Apply, with full par-culars, to "Bolivia," Evans Sons Lescher & Webb, Ltd., Export partment, 56 Hanover Street, Liverpool.

INDIA.—Manufacturing Chemist, qualified, required for India; age 25/35, with experience in manufacturing Drugs, alcnicals, Tablets, etc., on wholesale scale; some knowledge of harmaceutical machinery necessary; must be able to supervise bour, test finished products in Laboratory, and control despatches; arried men need not apply; four years' agreement; passage paid t and home; salary, first year £45 per month, second year 48 per month, third year £51 per month, fourth year £55 per nth; excellent opening for capable young man. Apply, with ll details of experience, etc., to 23/22M, Office of this Paper.

NYASALAND.—Clerk in the Medical Department required by the Government of Nyasaland for a tour of from 20 to 30 onths' continuous residential service with possible permanency. alary £250, rising to £400 per annum by annual increments of 15, with an outfit allowance of £30 on first appointment. Free uarters, passages and liberal leave in England on full salary. andidates, who are good shorthand typists, with a knowledge of ledical Dispensing, and who have served in some branch of M. Forces during the late war, unless satisfactory reasons for ot having done so can be furnished, should apply at once, by tter, stating age, qualifications, and experience, to the Crown gents for the Colonies, 4 Millbank, London, S.W. 1, quoting /9122.

SOUTH AFRICA.—Young, qualified Assistants open to accept situations in South Africa, should apply to Lennon, Limited, 2-14 Lafone Street, Tower Bridge, London, S.E. 1. South Africa prosperous and advancing steadily; the climate is particularly ne and healthy; cost of living moderate.

SITUATIONS WANTED.

[HOME.]

RETAIL.

2s. for 18 words or less; 6d. for every additional 10 words or less, prepaid.

he **Advertiser** may, if preferred, have replies addressed to this Office, and forwarded on payment of an additional charge of **1/-**.

A.A.A.—EXPERIENCED Assistant; age 24; quick and accurate Dispenser and first-class Salesman; excel-nt references; disengaged. "G. H.," 31 Wilberforce Road, Fins-ury Park, N. 4.

A QUALIFIED Chemist-Manager; best London experience. Apply 157/190, Office of this Paper.

A QUALIFIED Chemist, disengaged; Manager or Locum; thoroughly competent; fully experienced; up-to-date Photo-raphy; any locality; brisk business preferred. Apply 158/14, ffice of this Paper.

A SENIOR Assistant or Manager, unqualified; Dispensing, Photography, and Optics, requires berth; good references; ermanency; married; South Coast preferred. F. S. Gorell, 7 Western Road, Brighton.

ADVERTISER, disengaged, requires berth, whole- or part-time; Locum or permanency; West-End and Continental experi-nce; good references; fluent French. Apply P.C.B. 1/34, Office this Paper.

ALL-ROUND man, well experienced town and country, assistancy and management, desires berth; well educated; ge 33; unqualified. Apply 156/7, Office of this Paper.

AS Locum; permanency; excellent experience and references; reasonable terms. "Chemist," Kingston House, Pierrepont reet, Bath.

ASSISTANT; unqualified; 6 ft.; 44; smart appearance; Locum or permanency; disengaged; town or country; excellent refer-nces; experienced in all branches of Pharmacy; good Counter-an. "Radix," 325 Lyham Road, Brixton Hill, S.W.

ASSISTANT or Manager; unqualified; 30; married; Dispensing, Photography, Window-dresser; abstainer; reliable. "Statim," 13 Carden Road, Peckham, London, S.E. 15.

ASSISTANT, unregistered, seeks situation; temporary or permanent; London district; 12 years' experience. Apply Black, 30 Chandos Road, Cricklewood.

ASSISTANT (lady), Hall qualification, desires post in good Dispensing business early in September. Apply 156/2, Office of this Paper.

ASSISTANT (24), unqualified, requires situation as Dispenser in good-class Pharmacy; any district. Apply 156/20, Office of this Paper.

ASSISTANT; 22; Counter and Dispensing; good-class trade; disengaged now. Roberts, 95 Albany Road, Cardiff.

ASSISTANT (22), unqualified, desires post in Liverpool or district; good knowledge of Dispensing, private, N.H.I., and Agricultural; smart Salesman; disengaged July 31st. Write R. J. W., "Fronolen," Llangybi, Chwilog, Carnarvonshire.

ASSISTANT, unqualified, 30, immediately. Rhei, 287 Queen's Road, Peckham, S.E. 15.

ASSISTANT; qualified, 22; Welsh; excellent references. Roberts, Lark Hill, Penmaenmawr.

ASSISTANT, 25, referred in one subject in Minor, Medallist in Pharmacy, experienced, seeks engagement; Southsea or neighbourhood preferred, not essential. "D.," 26 St. Peters Grove, Southsea.

ASSISTANT, 23, part qualified, desires post until end September; Dispensing, Counter, Photographic; London experience; Square Certificate of Honour in Dispensing. Lightfoot, 24 Howard Street, Penrith, Cumberland.

ASSISTANT, 27, unqualified, desires permanency; North of England preferred; good experience and references; Prescriber; conscientious worker; disengaged September. Apply 154/32, Office of this Paper.

ASSISTANT, unqualified, 40, tall, married, desires permanency; reliable Dispenser; smart Counterman; interview willingly. Hannath, 53 Cantelupe Road, East Grinstead.

ASSISTANT, Senior, Branch; Dispenser, Prescriber, keen Salesman; record experience; disengaged; early permanency desired; reciprocal terms. 5 Port Street, Evesham.

ASSISTANT (28), unqualified; experienced in high-class Dispensing and Counter; disengaged. W., 53 Palace Square, Norwood, S.E. 19.

ASSISTANT, unqualified, young lady, 21, Counter experience, requires post with Chemist. Apply 158/12, Office of this Paper.

BANKS SWINBURN, Pharmacist, Penrith, wishes to place his nephew and late apprentice in a good shop; London or district preferred; qualified; tall and smart; age 23; abstainer.

BRANCH Manager, married, competent and energetic, qualified 1898, with excellent references, seeks re-engagement early in September on basis of salary and commission; rapid, accurate Dispenser, good Counterman, with West-End and best provincial experience; 15 years as Manager; resident or outdoor. England, 23 St. John's, Worcester.

CHANCE for a patriotic employer; smart, unqualified Assistant; excellent experience in Counter, Dispensing, Photographic; can take charge; ex-Sergeant-Dispenser; lost situation through enlisting; married; salary £3 10s. (outdoors). R. L. Quirk, "Kinross," College Road, Guildford.

DENTAL and Pharmacy branch management by middle-aged, experienced gentleman (both registers); married, no family; easy hours desired; please state salary and fullest particulars. "Dentalis," The Willows, Talke, Staffordshire.

DISENGAGED; qnalified; Manager, permanent or Locum; West End preferred; 25 years' London experience. "Chemist," 108b Elgin Avenue, W. 9.

DISENGAGED; unqualified; 32, married, abstainer; 12 years' pre-war experience Dispensing, Counter; used to quick cash business and heavy N.H.I.; references; London preferred. Swann, 11 Chichester Street, Chester.

DISENGAGED.—Experienced Assistant, nnqualified, middle-aged, seeks Locum or permanency; good appearance and good references; town or country. L. H. P., 3 Wyndham Street, Marylebone Road, W.

DISPENSER (lady), free August 1st, requires post; Doctor or Chemist; 8 years' good experience; knowledge of Photography. Apply 157/40, Office of this Paper.

DISPENSER (Hall) requires post; good experience; quick and reliable. Apply Miss Higgs, 43 Park Road, Gloucester.

DISPENSER (unqualified), age 23, desires post with Doctor or Chemist during the months of August and September; good experience. "Minor Student," 2 Higham Place, Newcastle-on-Tyne.

DISPENSER-BOOKKEEPER to Doctor; would do Locum; Dressings; experienced; excellent references; terms moderate. Apply 155/33, Office of this Paper.

DISPENSER-BOOKKEEPER to Doctor; qualified; Minor Surgery, Dressings, and Extractions; abstainer; married; sound references. Apply 157/35, Office of this Paper.

DOES your Business require re-organising?—Qualified, 36, active, desires change; Managership, London, 8 years; 1913 returns quadrupled; previous West-End Dispensing experience; good-class district, in or near London, preferred. "M.P.S." (159/9), Office of this Paper.

CHEMIST-OPTICIAN (qualified) has 2 afternoons free and evenings after six; Pharmacy, Optics, or both; occasional Sunday if desired; S.E. or S.W. preferred; interview. "Pharmacist" (158/39), Office of this Paper.

EXPERIENCED, all-round Assistant; unqualified; Manager or Senior; tall; 37; London preferred. Apply 157/39, Office of this Paper.

HOLIDAY Relief; qualified; East Coast resort preferred; during August and September; thoroughly competent; tall; age 32. Apply 156/16, Office of this Paper.

IMPROVER (27) requires situation; good experience. Morgan, 4 St. Albans Road, Treherbert, Glam.

JUNIOR, age 19, desires post; height 5 ft. 9 in.; 4 years' Dispensing and Counter experience; good references; fair salary; disengaged. Turner, 14 Sussex Road, Haywards Heath.

JUNIOR Assistant (21) seeks situation; recently demobilised; 5 years' experience prior to enlistment; Counter, Dispensing; Midlands preferred. F. Stanhope, 10 Sandy Lane, Mansfield.

LADY Dispenser (Hall) requires Locum or permanent post; good Hospital experience; excellent testimonials. Leeder, Draycot Road, Wanstead, E. 11.

LADY Dispenser (Hall) seeks post with Chemist; unexperienced, willing; ready third week in August. Jarvis, 42 Claremont Road, Westcliff-on-Sea.

LADY Dispenser (Hall certificate) desires post as Locum, in or near London; free July 30th-August 22nd. Corcoran, 124 Sutherland Avenue, Maida Hill, W. 9.

LOCUM; qualified; experienced; disengaged three weeks August. Apply "A. C.," 159 Mayor Street, Bolton.

LOCUM or permanent; qualified Manager or Senior; good town and country experience; disengaged; age 46; height 5 ft. 10 in.; good appearance and address. Longman, 70 Kennington Oval.

LOCUM; Major qualification; thoroughly experienced; well recommended; disengaged August 18th and mid-September. Dear, 111 Royal Parade, Eastbourne.

LOCUM.—H. Armstrong Brown, 1 Wathen Road, Dorking, Surrey, is at liberty for Locum work September 4 to 25; qualified; experienced Optical, Photographic; first-class references; highly recommended.

LOCUM; Major qualification; now disengaged. "C. H.," 23 Canning Street, Liverpool.

LOCUM, disengaged after August 16th, 1920; elderly; very active and good Salesman. Apply 147/38, Office of this Paper.

LOCUM or otherwise; elderly; qualified; good references. H. Key, Brook Estate, Monmouth.

LOCUM, Manager, or permanency; qualified; 26; excellent references; capable and experienced; accustomed to good-class business; open for immediate engagement. Kindly address inquiries to "Pharmacist," 1 Woollaston Villas, Crofton Park, London, S.E. 4.

LOCUM, qualified (27), excellent references, disengaged July 24th; please state terms. "Confident" (158/1), Office of this Paper.

LOCUM; wide experience; highest references; well recommended. Brown, Fort House, Berry Head, Brixham, Devon.

LOCUM, qualified; disengaged August 9th; London district; West-End experience. Batison, c/o 16 Market Square, Leighton Buzzard, Beds.

LOCUM or Assistant, experienced; town or country; disengaged July 26th. "Locum," 38 Spittal Square, Marlow.

LOCUM TENENS, qualified; disengaged July 30th to August 10th and after August 20th; steady and reliable. Stone, c/o Arnold, Chemist, King's Road, Southsea.

LOCUM, disengaged for three weeks. Duckett, 4 St. Andrew's Square, Surbiton.

LONDON.—Unqualified Assistant requires situation until end of September; age 28; tall; quick and accurate Dispenser; excellent references; five years' South Coast experience; now disengaged. Russell, 38 Atnerfold Road, Clapham, S.W. 9.

MANAGER, qualified, young and energetic, desires position; Blackpool or Preston districts. Apply 156/11, Office of this Paper.

MANAGER (Branch), married, no children, requires easy berth with house accommodation; middle-class business preferred; Minor; would invest small capital in suitable concern, or would entertain working partnership. J., Cavendish House, Westcliff, Herne Bay, Kent.

MANAGER or Senior; qualified; 31; height 6 ft. 5 in.; 14 years' experience; excellent references. Hey, 17 Cavendish Street, Lancaster.

MANAGER, qualified, desires berth, view to succession or partnership; thoroughly capable and good organiser; highest credentials. Please state full particulars, salary, hours of business, etc., Hall, 3 Winterburn Hill, Warley, Halifax.

MANAGER or Senior; qualified; 38; best-class experience as Assistant and Manager; good organiser; fluent French; town or country; at liberty. Scott, 57 Cartwright Gardens, W.C. 1.

MANAGER.—Pharmaceutical Chemist, with view to succession; 8 years' experience, home and abroad; cash available. "Tarax," c/o Evans Sons Lescher & Webb, Ltd., Hanover Street, Liverpool.

MANCHESTER or Neighbouring Town.—Qualified Locum from mid-August; interview preferred. "M.P.S., c/o 12 Thurlby Street, Longsight, Manchester.

PART-MINOR Assistant (male); energetic; experienced Dispensing, Photographic; age 25; married; disengaged; London or Eastern Counties; full- or part-time. Replies "F. W. C.," 48 Milton Road, Lowestoft.

PHARMACIST, disengaged August 30; Locum, or permanent Manager if house available; experienced all branches London and provincial. W. Peacock, c/o Mr. Henshaw, Chemist, Wyle Cop, Shrewsbury.

PHARMACIST requires Locum work during summer months; first-class all-round experience; Photography. Owens, 17 The Circle, Harborne, Birmingham.

PHARMACY Student (lady) desires holiday post July and August, part-time October-June. R., Roding Villa, Maybank Road, South Woodford.

POSITION wanted as Manager or Locum; London or country; qualified; 36; 20 years' experience; excellent references; expert Prescriber, Photography; disengaged. Terms to Stout, 231 Knight's Hill, S.E. 27.

QUALIFIED, 39, as Manager; best-class experience; disengaged. Apply P.C.B. 1/22, Office of this Paper.

QUALIFIED, young, energetic, requires position; London preferred; excellent references. "Rex" (153/16), Office of this Paper.

QUALIFIED (recently), ex-officer, single, 5 ft. 8 in., desires good position to gain up-to-date experience; quick and accurate; Photography. Apply 155/35, Office of this Paper.

QUALIFIED wishes situation in Scotland; first-class experience, Dispensing, Photographic, and Counter work; full particulars nd references. Apply 156/26, Office of this Paper.

QUALIFIED, 27, married, desires position in town or country; competent and reliable; excellent references. Webb, Denston, Newmarket, Suffolk.

QUALIFIED man (24) requires position; Manager or Assistant; good appearance; medium height; excellent references. Chambers, c/o W. Gill, 207 Radford Road, Nottingham.

QUALIFIED (25) requires temporary situation; seaside preferred; knowledge of photography. "A. N.," 7 Barn Road, Norwich.

QUALIFIED, young, requires berth or Managership with view to permanency. Apply 154/40, Office of this Paper.

QUALIFIED, young, married, seven years' Photographic, Counter, first-class Dispensing, requires progressive berth. King, 31 Rylett Road, W. 12.

QUALIFIED (23), good Dispensing and Photographic experience, desires post; disengaged; South preferred. B. Harris, "Fryleigh," Haslemere, Surrey.

QUALIFIED, 24, single, desires permanency, any capacity; good experience; disengaged end of August; please state alary offered. Reedman, 92 St. Saviour's Road, Leicester.

QUALIFIED (21) wants Locum work for any period; £6 6s. weekly. Crossley, School House, Selattyn, Oswestry.

QUALIFIED; Manager, permanent, or temporary; good general experience and references; London, provinces, or S.E. Coast; disengaged July 26th. Furnival, 28 Melrose Avenue, Cricklewood, N.W.

QUALIFIED Chemist, disengaged, desires permanency; Manager or Assistant; near Watford or London; good town and country experience; good references. Venables, 150 Whippendell Road, Watford.

QUALIFIED, also qualified in Optics, at liberty mid-August; London (or provinces if accommodation available); age 28; married. P.C.B. 2/9, Office of this Paper.

QUALIFIED (ex-Captain), 27, desires situation as Manager or Senior with good firm; excellent references. Apply 58/100, Office of this Paper.

QUALIFIED (31) requires position as Manager; good work for good salary. State same in replies to 159/8, Office of this Paper.

QUALIFIED woman seeks post; first-class Dispensing and Counter experience; well recommended. Apply 159/17, Office of this Paper.

QUALIFIED; single; 32; disengaged August; Midlands or North preferred; good experience. "C.," 10 Burnley Road, Lockwell, S.W. 9.

QUALIFIED Manager or Locum; disengaged; good all-round experience; town or country. J. Fraser, 139 High Road, East Finchley, N. 2.

QUALIFIED; 28; Scotsman; 12 years' first-class experience; highest references. Grant, 8 St. John's Road, Brixton, W. 9.

QUALIFIED (26); disengaged; excellent references. Please state particulars, "R.," 61 Arohers Road, Eastleigh, Hants.

QUALIFIED; Assistant or Manager; 27; high-class Dispensing and General experience; London preferred. Parry, 126 Cambridge Street, Warwick Square, S.W. 1.

QUALIFIED (woman); 24; 9 years' experience; knowledge of Photography; exoellent references. 23 Broughton Road, Sheffield.

QUALIFIED, young, male, desires situation; usual references; West of England preferred, not essential; free August 23rd. E. H., Cleveland Pharmacy, Bath.

QUALIFIED, desires position in good-class business; London district preferred; Locum or permanency. 25 Chatsworth Street, Sunderland.

QUALIFIED (32), abstainer, desires permanent post or shop, view succession; not afraid of work. 157/23, Office of this Paper.

RECENTLY Qualified (25) desires responsible post; good experience; Yorkshire preferred. Mackavoy, Batley Carr, Yorkshire.

RETIRED Pharmacist, elderly, active, open to take light duties; London; moderate salary; banker's reference. "T. R." (158/11), Office of this Paper.

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STUDENT, passed Part I., 24, tall, desires post evenings in good Dispensing business, London, after August 16th. Apply 154/30, Office of this Paper.

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UNQUALIFIED, five years' Retail, Dispensing, and Photographic experience, requires position. Thomas, 41 Queenswood Road, Forest Hill, S.E.

UNQUALIFIED, Retail experience, age 31, single, desires berth; Midlands preferred; salary £3 10s. (outdoors). Apply 153/7, Office of this Paper.

UNQUALIFIED; married; good all-round man, with splendid Dispensing experience; capable of taking charge; 10 years last situation; excellent references; Manchester district preferred; interview desired. "Radix" (P.C.B. 86/24), Office of this Paper.

UNQUALIFIED; 15 years' experience Dispensing, Retail, and Photographic. Jamieson, 39 Pepys Road, New Cross, S.E. 14.

UNQUALIFIED Assistant (26) desires permanency in Light Retail; trustworthy; good references; disengaged by month's notice. Particulars to T. Lloyd, 24 Bartlett Street, Caerphilly, S. Wales.

YOUNG lady (19) requires post with Chemist to gain good Dispensing experience; completing studies. Apply 156/17, Office of this Paper.

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WHOLESALE.

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QUALIFIED Chemist desires situation as Buyer or Sales Manager; only first-class offer considered; interview required. Apply 156/8, Office of this Paper.

QUALIFIED, Medical, open to engagement in Drug line; Traveller or otherwise; interview any time. P.C.B. 2/7, Office of this Paper.

REPRESENTATIVE, with first-class Chemists' connection Midlands, Eastern Counties, and the North, desires change; good experience Sundries and Toilet preparations. Apply P.C.B. 87/38, Office of this Paper.

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